COMPARISON OF HYBIRD TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY TECHNIQUE IN ICU PATIENTS

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I hereby declare that the thesis entitled "**COMPARISON OF HYBIRD TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY TECHNIQUE IN ICU PATIENTS"** submitted towards partial fulfillment of the requirements for the award of **MD in ANAESTHESIOLOGY** degree to BFUHS is a compilation of original work carried out by me under the supervision of **Dr. Udeyana Singh** Associate Professor, Department of Anaesthesiology, **Dr. P.L. Gautam,** Professor & Head, Department of Critical Care Medicine **and Dr. Rohit Verma,** Professor, Department of ENT. No part of this thesis has formed the basis for the award of any degree previously.

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Dedicated to

my parents,

teachers, and

friends

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"Create the highest, grandest vision possible for your life, because you become what you believe." ~ Oprah Winfrey

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Dr. AMANDEEP PARMAR

LIST OF ABBREVIATIONS

HT	Hybrid Tracheostomy
PDT	Percutaneous Dilatational Tracheostomy
ST	Surgical Tracheostomy
ICU	Intensive Care Unit
OT	Operation Theatre
SBP	Systolic Blood Pressure
MAP	Mean Arterial Pressure
HR	Heart Rate
SpO2	Oxygen saturation
RR	Respiratory Rate
ECG	Electrocardiogram
ABG	Arterial Blood Gas
NIBP	Non Invasive Blood Pressure
VCV	Volume Control Ventilation
ETT	Endotracheal Tube
EtCo2	End Tidal Carbon dioxide
ASD	Anti septic Dressing
PTI/INR	Prothrombin Time/International Normalized Ratio
SOFA	Sequential Organ Failure Assessment
APACHE	Acute Physiology and Chronic Health Evaluation

ABSTRACT

Introduction: Tracheostomy is a commonly performed procedure in patients requiring prolonged ventilation. The classical surgical tracheostomy (CST) is the standard surgical procedure performed by general surgeons and otolaryngologists in the OT. In the past few decades, percutaneous dilatational tracheostomy (PDT) is being performed at the bedside in theICU. The advantage is that PDT does not require the transfer of patients to OT. This decreases the staff requirement, thereby decreasing the risk of exposure to infections. PDT has certain limitations, that it cannot be performed in patients with previous neck surgery, grossly difficult neck anatomy and coagulopathy. This has led to the evolution of a new technique which does not need lots of equipment at bedside known as Hybrid Tracheostomy. We propose to compare Hybrid Technique (HT) with percutaneous dilatational tracheostomy in chronically ventilated ICU patients.

Aim of Study: To compare Hybrid Tracheostomy with Percutaneous Dilatational Tracheostomy in terms of: Duration of procedure, Short term complications like hemorrhage, infection, tube obstruction and tube displacement, Complications during transfer of patients to and from ICU to OT.

Materials & Methods: A prospective randomized controlled study was conducted in the department of Anesthesiology, Dayanand Medical College & Hospital, and Ludhiana after approval by the Institutional Ethics Committee on patients age 18 years or above undergoing tracheostomy during the time period of one year from September 2022 to August 2023. These patients were randomly allocated to either of the two study groups by computer generated random numbers contained in sealed, sequentially numbered envelopes. A written informed consent was obtained from each patient/legal guardian. Participants were divided into two groups: HT and PDT. The two groups were then followed for a period of 7 days to look for the incidence of early complications.

Clinical Significance: Use of HT may reduce the risk of early complications compared to PDT and thereby decrease the tracheostomy related morbidity and cost of the procedure. Furthermore, HT may limit the number of persons exposed during procedures conducted on infectious patients like COVID 19 infected patients.

Results: The mean time procedure time for group HT was 2.99+/-0.70 min and the mean procedure time for group PDT was 2/64+/-0.46 min showing statistical difference with p value of 0. 001.Post procedural bleeding was seen in 10(13.13%) cases in group PDT as compared to 5(6.7%) casesin group HT showing no statistical difference with p value of 0.175 and most of the time it was minor ooze.

Conculusion:Hybrid tracheostomy is comparable to percutaneous dilatational tracheostomy in terms of duration of prcedure and early complications.Both technique can be safely performed in ICU patients on bedside preventin exposure to infection during transfer

Keywords: Tracheostomy, Percutaneous dilatational tracheostomy, classical surgical tracheostomy, Hybrid tracheostomy, Early complications.

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INTRODUCTION

The term tracheostomy's originates from a Greek word that means “cutting the trachea”. Tracheostomy is one of the oldest surgical procedures, first described by Egyptians in 3600 B.C.[1] The first scientific description of tracheostomy was given by Antonio Musa Brasavola in 1546 who performed it for the relief of upper airway obstruction due to enlarged tonsils.[2] In the early 20th century this technique was standardized bythe famous surgeon Chevalier Jackson who described the technical aspects of this technique.[3]

Tracheostomy exteriorizes the trachea to the skin of the neck, producing an opening through which a tracheostomy tube can be inserted to keep the airway patent. Tracheostomy can be created by an open surgical technique, percutaneous dilatational technique or by hybrid technique.[2]Tracheostomy is done in patients with acutemaxillo-facial trauma in whom intubations is not possible due to altered airway anatomy and bleeding, patients requiring prolonged ventilation (more than 7 days), facilitating weaning by decreasing the need for sedation, and airway protection in patients with motor neuron disease, traumatic brain injury, or upper airway obstruction.[4,5,6]

Surgical tracheostomy(ST) is performed in OT by general surgeons or otolaryngologists. This involves full dissection of pre-tracheal tissue and insertion of a tracheostomy tube under direct vision. Surgical tracheostomy is often timeconsuming and requires the transfer of the patient to the operation theatre and significant staff utilization. It increases the risk of exposure to infection as it requires transferring of patient to OT and increases the cost of the procedure.[7,8]

Percutaneous dilatational tracheostomy(PDT) can be performed at the patient bedside and was first attempted by Sheldon et al in 1955 who used

a slotted needle to gain access into the airway and used this to guide the cutting trocar into the trachea. However, this procedure didn't gain much acceptance due to the difficulty of the procedure and mortality caused by lacerations of vital structures around the trachea by trocar. In 1969 Toye and Weinstein used a single tapered dilator with a recessed cutting blade to perform tracheostomy, but it did not gain much popularity among medical fraternity.[9,10]

In 1985,Cigala et al described a new technique that involves using a guide wire inserted through a cannula followed by serial dilatations with sequentially larger dilators to insert a tracheostomy tube. This technique gained acceptance over surgical tracheostomy.[11] In 1990, Griggs and coworkers described another technique that uses grooved Howard Kelly forceps in which there is a hole at the tip of closed forceps through which guidewire can be passed, thus steering it in the right direction. This dilatation of the trachea at the point where the cannula needs to be inserted is done byspreading the forceps. However, it was reported that in comparison to Griggs, the Cigala technique had been associated with a lower complication rate. In 1999 Cigala modified this technique by replacing multiple dilators with a single tapered dilator “Blue Rhino” called Cigala Blue Rhino PDT kit.[12]Translaryngealtracheostomy (TLT) technique involves using a specially designed cannula that consists of a flexible plastic cone with a metal tip at its end to dilate the trachea and the guidewire in this case not only guides the tool but also dilates the trachea. This technique is used in cases with short and thick necks where PDT is difficult to perform. Finally, Frova and Qunitele describe a technique using single step screw dilator.[11]

Thus, various methods of doing PDT were introduced, all using the Seldinger technique to gain access into the trachea after minimal dissection to insert a tracheostomy tube.PDT can be performed by six different techniques: balloon dilatational tracheostomy (BDT), guidewire

dilatating forceps tracheostomy (GWT), multiple dilator tracheostomy (MDT), rotational dilatation tracheostomy (RDT), single step dilatation tracheostomy (SSDT), and trans laryngeal tracheostomy (TLT).[13] This technique involves limited dissection and doing blunt dilatational of pre-tracheal tissue at the site of incision to create a passage for the tracheostomy tube using the Seldinger technique.

PDT involves less tissue dissection, so it lessens tissue damage and decreases the risk of bleeding in comparison to surgical tracheostomy.[14] It also decreases the incidence of hemodynamic instability and infection as it can be performed bedside in ICU and does not need transfer of patient from ICU to OT. PDT has certain limitations such as patients with difficult neck anatomy and coagulopathies.[15] Bronchoscopic and ultrasound-guided PDT has the disadvantage of requiring a lot of equipment and experts at the site.

There is a new technique known as Hybrid Tracheostomy (HT). Hybrid tracheostomy combines the advantages of percutaneous dilatational tracheostomy and classical surgical tracheostomy. In Hybrid tracheostomy after giving sedationand appropriate muscle relaxant to the patient and checking landmarks, transverse skin incision of about 1 to 2 cm made. The pre-tracheal tissue is dissected to expose the trachea. Using PDT kit, tracheostomy is then performed. This technique doesn't require lots of equipment and expertise and can be performed at thebedside in the ICU without the need to shift patients to the OT,thereby decreasing the cost of the procedure and decreasing the incidence of exposure to infections.[16] In times like the COVID pandemic and situations where patients need to be kept isolated hybrid tracheostomy was preferred as it limits the need for equipment, manpower, and the need to shift the patient to operation theatre.[17,18] Hybrid tracheostomy has another advantage over PDT in that it can be safely performed in patients taking antiplatelet or anticoagulants

as neck dissection is done under vision and bleeding can be controlled.[19] Hybrid tracheostomy thus overcomes the limitations of both surgical and percutaneous dilatational tracheostomy.

Various studies have compared percutaneous dilatational tracheostomy. A randomized controlled trial conducted by William Silvester et al in 2006 compared percutaneous dilatational tracheostomy with surgical tracheostomy using term follow-up for 12 months. They included 100 patients in both PDT and HT groups. They concluded that both procedures can be safely performed and there is no significant difference between both group in terms of bleeding. However, incidence of infection was reported in the postoperative period in the Surgical Tracheostomy group. There have been many meta-analyses done comparing surgical tracheostomy with percutaneous dilatational tracheostomy.[20] Rosa Klotz et, al did a meta-analysis in 2017 using RCTs only.[13] They concluded that both PDT and ST are safe techniques with low incidence of complications. ST has an advantage over PDT in that it has fewer contraindications and can be safely performed in most patients.

There are few studies on hybrid tracheostomy. Alberto Molardi et al in 2016 conducted a study comparing New Surgical Modified technique (NSMT) with Classical Surgical Tracheostomy (CST).[19] This study collected data regarding early complications, tracheostomy related mortality, and long term complications using telephonic follow up. This study concluded that the NMST group has a significantly lower number of complications compared to CST. Tracheostomy-related mortality was higher in the CST group and there was no significant difference in long term complications in both groups. Daeu et al did a study on hybrid tracheostomy in 2021 on the safety and feasibility of HT on 55 patients without bronchoscopic guidance.[21] This study concluded that HT can be safely performed without significant complications, without requiring lots of

equipment and experts at the bedside, and also can be safely performed on patients taking anticoagulants and antiplatelets. However, this study said that this procedure has certain limitations in that it cannot be performed in patients with a short neck, neck burns or previous radiation therapy to the neck.

As there are very few studies available on hybrid tracheostomy which is a newer technique, we did this study to compare the hybrid tracheostomy with percutaneous dilatational tracheostomy. Our study aimed to compare the hybrid tracheotomy and percutaneous dilatational tracheostomy in terms of the duration of the procedure and incidence of complications.

AIMS AND OBJECTIVES

To compare hybrid tracheostomy with Percutaneous Dilatational tracheostomy in terms of:

- Duration of procedure
- Early complications(upto 7 days) and adverse events

REVIEW OF LITERATURE

Tracheostomy term originates from two Greek word (trachea-tomeo) means “cutting the trachea."[22]Tracheostomy is a surgically created airway that is kept open with a breathing tube or tracheostomy tube.[23] The tube is inserted into trachea directly through an incision in neck either by classical surgical tracheostomy (CST) or percutaneous dilatational tracheostomy (PDT) method. Tracheostomy was rarely successful until nineteenth century.[11]Early 1900s saw standardization of modern tracheostomy by Chevalier Jackson thereby establishing it as simple, safe and effective procedure to establish airway. Jackson advocated entry into trachea at anterior aspect of second and third tracheal rings which has not changed over decades.[9] In1960, Bjork modified this technique where an inferiorly based flap of portion of second and third tracheal rings which is sutured to the skin of neck. This provides a safe path to reinsert tracheostomy tube in cases of early tube dislodgement and avoided the potentially disastrous complication of false passage. This so-called Bjork flap is widely advocated by otolaryngologist.[12]

PDT was first attempted in 1955 by Sheldon et al by gaining airway access with a slotted needle which was used to guide a cutting trocar into trachea. This procedure did not gain much popularity over CST due to multiple deaths that were reported due to laceration of vital structures in the neck by the trocar and catastrophic hemorrhage. [12]

In 1985, Ciaglia et al described a new technique for PDT which was proposed as low cost and low mortality alternative to CST. This new technique involved the insertion of tracheostomy tube with the use of guidewire through a cannula into tracheal lumen followed by serial dilations with sequentially large dilators using Seldinger technique under bronchoscopic guidance.[9] Compared to CST early results of this technique were excellent. Since then, six different commonly performed

techniques can be distinguished. These are balloon dilation tracheostomy (BDT), guidewire dilating forceps tracheostomy (GWT), Multiple dilator tracheostomy (MDT), rotational dilation tracheostomy (RDT), single step dilatational tracheostomy (SSDT) and trans laryngeal tracheostomy (TLT).[24]

In1990, Griggs et al developed another guidewire dilating forceps with smooth rounded tip and it provides rapid formation of tracheostomy compared to Ciaglia's technique which takes longer time.[25]
In today's time Ciaglia's multiple dilators kit and Griggs single step dilation forceps kit are most widely used worldwide.[26]In 1999, Cigala modified his own technique by replacing multiple dilators with single tapered dilator "Blue Rhino" called Cigala Blue Rhino (CBR) technique.[26,27] This was last updated as Ciaglia Blue Dolphin Tracheostomy Introducer Kit in which expansible balloon is used as dilator which is introduced into soft tissues and trachea over guiding catheter and forced to expand for 30secs before being removed and replaced by tracheostomy tube.[2] There is also another new technique which requires use of single step screw dilator that is threaded into tracheal stroma using lifting motion and has been recently described by Fova and Quintel.[19]

A randomized controlled study was conducted by William Silvester et al in 2006 comparing percutaneous versus surgical tracheostomy with long term follow up (>12 months).100 patients are taken in each PDT and ST group. Out of 100 patients in PDT group 29 had long term follow up and out of 100 patients taken in ST group 42 had long term follow up. The combined procedural complication rate was 3.5 %. Perioperative bleeding was minimal in majority of patients and only 3 patients in PDT group had significant bleeding. In all 3 bleeding was stemmed with pressure and procedure was converted to ST. One patient in PDT group developed pneumothorax One patient in ST group accidently decannulated 10 mins

post insertion. There was no significant difference between groups in terms of incidence of bleeding in first three postoperative day or presence of infection. There was high incidence of infection reported on postoperative day in ST group. There was even distribution of symptoms of dyspnea, stridor and cough between both groups. They concluded that both procedures can be safely performed at the bedside and were unable to find significant difference in perioperative and postoperative complications between both groups.[20]

Yousef et. al did study in 2011 on percutaneous dilatational tracheostomy versus conventional surgical tracheostomy in intensive care patients in 2011.Patients were randomly divided into two equal groups of 32 patients each into percutaneous dilatational tracheostomy and conventional surgical tracheostomy. Primary end points were mean operative time, intraoperative arterial blood gases, intraoperative blood loss and tracheostomy tube size and secondary end points were complications in both techniques. All patients were subjected to strict observation in first 24 hours then daily for one week and every other day for regular suctioning of tube for month and finally followed every week for a year. There was no statistical difference between two groups in terms of age and gender. There was no mortality related to tracheostomy in both groups. A total of 18 patients out of 64 patients died due to underlying disease while the tracheostomy was functioning well. Mean duration of procedure was nearly similar in both groups (20.1 versus 19.3 minutes) with no statistical difference between both groups. Pneumothorax occurred in one patient in PDT group and 2 patients in CST group with no statistical difference. Infection was statistically lower in PDT group compared to CST group. This study concluded that PDT technique is as effective and safe as CST.PDT reduces overall incidence of wound infection and clinically relevant bleeding and mortality compared to CST. PDT is considered

procedure of choice for performing tracheostomies in critically ill patients.[28]

There have been many meta-analyses comparing PDT and ST. Rosa Klotz et. al did a systematic review and meta-analysis in 2017 on perioperative and post-operative complications. To achieve highest level of evidence, they included RCTs only. The mean duration of PDT varied from 4 to 32 mins and that of ST from 9 to 44 min. The primary end point of this study was risk of potentially life-threatening complications such as loss of airway, false route, tracheo/esophageal injury, major bleeding, pneumothorax/subcutaneous emphysema, regurgitation and gastric aspiration, difficult tube exchange and others. There was no significant difference between PDT and ST in late complications including tracheal stenosis, tracheomalacia and tracheocutanous/esophageal fistula (RD – 0.01, 95% CI – 0.06 TO 0.03, p = 0.51). This study concluded that ST and PDT are safe techniques with low incidence of complications .ST has advantages that it can be performed in all patients whereas PDT is limited by several contraindications. [13]

Hashemian et al did a prospectiverandomizeddouble blinded trial in 2015 comparing mini surgical percutaneous dilatational tracheostomy with surgical and classical percutaneous dilatational tracheostomy.360 patients were enrolled in this study was divided into PDT, ST and msPDT groups. The nurse head responsible for enrolling the patients into group did not participate in the study. Complications such as intraoperative and postoperative bleeding,hypotension and hypoxia were noted by a nurse blinded to the procedure. This study showed that the mean procedural time for patients who underwent msPDT(2min; SD=0.7) as compared to PDT(7.5min; SD=3.3) was statistically lower with p value of <0.001.Intraoperative hypoxemia and paratracheal insertion was reported in (6 patients ; SD=3.8)in group PDTand none in patients in group msPDT

showing significant difference with p value <0.0001.There was no significant difference between two groups for mild to moderate bleeding. Severe bleeding was reported in 2 patients (SD=1.3) in msPDT group as compared to 6 patients (SD=6.9) showing statistically significant difference with p value of <0.0001.There was no significant difference in other complications in both groups. This study concludedthat procedure time was significantly lower in msPDTgroupcompared to PDT group and msPDT group showed lower rate of paratracheal insertion, bleeding and risk of hypoxemia compared to group PDT.[29]

There are few studies on hybrid tracheostomy. In 2016 Alberto Molardi et al did study on hybrid tracheostomy. 67 Tracheostomies were performed using New Modified Surgical Technique (NMST) AND 56 with Classical Surgical Technique (CST). Data was collected on early clinical complications, TT related mortality and late complications by doing telephonic follow up. NMST group were found to have significantly lower number of early complications (p=0.005) compared to CST group (5 versus 10). In hospital mortality was significantly higher in CST group (18 deaths versus 4 in NMST group, P= 0.001). There was no difference in group regarding short term and mid to long term mortality This study concluded NMST group had significantly lower number of early complications compared to CST group. In hospital TT related mortality was higher in CST group. There was no difference in groups regarding short or mid long term complications. [19]

Daeu Kang et. al did a study in 2021 on safety and feasibility of hybrid tracheotomy. Data from 55 patients who received hybrid tracheostomy without bronchoscopy were collected. The average duration of procedure was 13.3 min. Out of 55 patients, 13 had immediate complications. 12 of the patients had oozing at tracheostomy site and 1 patient had paratracheal placement of tracheostomy tube This study concluded that

procedure can be safely performed without any major complications, can be done in patients taking antiplatelet or anticoagulants and it does not need lots of equipment and experts at bedside but it has limitations.It cannot be performed on patients with short neck, neck burn or patients who received radiation therapy to the neck. [21]

Nikbakhsh et al did a prospective randomized trial study in March 2021 on comparison of semi surgical percutaneous dilatational tracheostomy. The trial was conducted on 160 patients in medica intensive care unit(ICUs). Patients weredivided into 2 groups of conventional percutaneous dilatationaltracheostomy (CPDT group) and semi surgical percutaneous dilatational tracheostomy (SSPDT). These two groups are compared in terms of complications such as (pneumothorax, stoma infection and accidental decannulation) and duration of procedure. Thesetwo groups were same in terms of age,gender,mean APACHE score($p > 0.05$). The duration of procedure was 5.16 +/- 1.72 mins in SSPDT and 6.42+/- 1.71 in CPDT group ($P<0.001$) The complication rate was 7(8.75%) in SSPDT group and 16(20%) in the CPDT group ($p= 0.043$). SSPDTwassafer and had fewer complications than CPDT inICU patients.[30]

Yeon et. al did a prospective single center studyin April 2024on hybrid modified percutaneous dilatational tracheostomy (MPDT) reducing the risk of COVID 19 aerosol dissemination in health care workers.They performed hybrid MPDT tracheostomy involving combination of conventionaltracheostomy andPDT. Hybridtracheostomy was performed by giving small incision and doing minimal dissection without using bronchoscopeguidance. The tip of the endotracheal tube was kept at the level of cricoid cartilage. Hybrid MPDT was performed in 20 patients with COVID 19. Patients were evaluated preoperatively using Charison Comorbidity Index Score (CCIS) and Acute Physiology and Chronic Health Evaluation II (APACHE II) Score. Mean time from intubation to

tracheostomy,decannulation, survival rate, operation time and complications for tracheostomy weremeasured. All team members wore level D protective clothing and powered air purifying respirator (PAPR) equipment. The average procedure time was 6.45 +/-1.02min. No medical staff was infected. One patient who was on heparininfusion duringECMO hadtracheostomy site bleeding. No other complicationswereencountered. They concluded that Hybrid MPDT performed using four instruments and without bronchoscope was found to enable rapid and safe airway management and minimize the risk of occupationalinfections.[31]

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MATERIAL AND METHODS

After clearance by institutional ethics committee the study was conducted on patients admitted to DMC&H ICU who were intubated and required prolonged ventilation thereby needing tracheostomy. A prospective study was conducted during the one year period from August, 2022 to September, 2023. Written Informed consent was obtained from the legal guardian regarding the procedure and also for participation in the study. Patients of either sex, age 18 and above needing tracheostomy were randomly allocated to either of two groups: Percutaneous Dilatational Tracheostomy (PDT) and Hybrid Tracheostomy (HT) randomly and the procedure was performed. Participants were then followed for a period of 7 days to look for development of any complications.

Prospective randomized controlled study was conducted on patients aged 18 years and above requiring tracheostomy. After obtaining informed written consent, patients were allocated to either of two groups. Percutaneous dilatational Tracheostomy (PDT) or Hybrid tracheostomy (HT) group via computer generated random numbers sealed in an envelope. Percutaneous dilatational tracheostomy was performed by the intensivist; Hybrid tracheostomy was performed by intensivist and otolaryngologist at the bedside in the ICU and classical surgical tracheostomy was performed by otolaryngologist in the operation theater. After appropriate sedation, procedure was performed. Patient was followed for a period of 7 days. The data once collected was statistically analysed.

INCLUSION CRITERION

Patients requiring tracheostomy for prolonged ventilation

Weaning failure

Upper airway obstruction

Copious secretions

EXCLUSION CRITERION

Refusal of consent for tracheostomy and inclusion in study

Uncontrolled coagulopathy

Morbid Obesity

Infection at tracheostomy site

PROCEDURE FOR PDT TECHNIQUE

Patients underwent a standard percutaneous dilatational tracheostomy using Grigg's dilator. Each patient was assessed before the procedure by using the ICU scoring system (SOFA score). Pre-procedure assessment and investigations (hemogram, renal function tests, PT/INR, ABG) were conducted as per institutional protocol. The procedure was explained and a written, informed consent was obtained from the patient/legal guardian. Monitors were attached for continuous monitoring of ECG, heart rate, spO2 and Noninvasive blood pressure (NIBP). Intravenous access was ensured.

Patient was sedated by giving Midazolam 0.1 to 0.2mg/kg and Fentanyl 2 ug/kg. Muscle paralysis was achieved by using Inj. Atracurium 0.5 mg/Kg I/v. Patient was positioned by placing a roll underneath the shoulders causing extension at the neck. After suctioning Endotracheal Tube was pulled out upto black mark at level of vocal cords under laryngoscopic guidance and patient was put on VCV mode of ventilation with Fio2 1.0. Under all aseptic conditions neck was cleaned with 10 % povidone iodine and draped with sterile drapes. Anatomical landmarks such as the thyroid notch, cricoid cartilage, tracheal rings were marked on the skin. The space between tracheal rings T2 and T3 (T1 and T2 in those with short neck) was palpated and infiltrated with 3 to 5 ml, 2 % xylocaine with adrenaline. A small horizontal incision was made at the same level and then skin and subcutaneous tissues were dilated using artery forceps until trachea was reached. Trachea was punctured under bronchoscopic guidance using a

14 G cannula to which a saline filled syringe was attached. After aspiration of air, the syringe was detached and a guidewire was inserted through a 14 G cannula. A J-tip Guide wire was guided through outer sheath into the trachea using the railroad technique. Keeping the guide wire inside the trachea, outer canula was removed. Then a white dilator was glided over the guide wire. A metal dilator Grigg's guidewire dilating forceps (GGDF) was glided over the guide wire into the trachea. As it pierced trachea it gave a giveaway feeling, then the jaws were opened leading to dilatation of the skin, subcutaneous tissue and trachea. Then the metal dilator was removed while the guide wire was still inside the trachea.

Finally an appropriate size cuffed tracheostomy tube (cuff checked and lubricated) with stylet in situ was passed over the guide wire using the railroad technique into the trachea. Then a purple stylet and guide wire was removed and the cuff was inflated. Tracheostomy tube placement was verified with the auscultation of bilateral equal air entry, EtCo2 reading and airway pressure. Tracheostomy tube was secured with the help of straps provided in the kit. ASD done with betadine dressing and ETT removed with continuous suctioning. Duration of procedure was noted. As in the previous groups, relevant data was noted.

PROCEDURE FOR HYBRID TRACHEOSTOMY

Each patient was assessed before the procedure by using ICU scoring system (SOFA score). Relevant investigations including the hemogram, PTI/ INR, RFT, ABG were checked as per the hospital protocol. Informed written consent was obtained from the patient/legal guardian. Continuous ECG, NIBP, spO2, EtCo2 monitoring was performed. Intravenous access was ensured. Suction equipment and cautery was kept ready for use. A pillow was placed underneath the shoulder to extend the neck. Appropriate sedation, analgesia, and muscle paralysis with an injection of

Fentanyl 2 ug/ kg, injection of Midazolam 0.1 to 0.2 mg/ kg, injection of Atracurium 0.4 to 0.5 mg/kg was administered according to the body weight and titrated upwards according to the clinical response.After oral and endotracheal suctioning, Endotracheal Tube was pulled out upto the black mark at the level of the vocal cords under laryngoscopic guidance and patient was put on the VCV mode of ventilation with Fio2 1.0. Under all aseptic conditions, neck was cleaned with 10 % povidone iodine and draped with sterile drapes. Anatomical landmarks were marked and identified (Thyroid notch, cricoid, tracheal rings and sternal notch). If the tracheal rings were not palpable then a point 1 cm below the cricoid cartilage was marked and infiltrated with 3 to 5 ml of 2% lignocaine with Adrenaline (1: 200,000). A 1.5 cm transverse incision was made and the pretracheal tissues were separated with a scissor/mosquito forceps and retracted with the use of a Volkman's retractor. Haemostasias was achieved by the use of packing or use of electric cautery as required. Thyroid isthmus was retracted superiorly or inferiorly with dissection. The trachea was then visualized at the level of the second and third tracheal rings. Trachea was punctured with a 14 G cannula on needle in posterior and caudal direction. Entry into the trachea was confirmed by the aspiration of air bubbles in a saline filled syringe. A ‘j’ tip guide wire was passed through the cannula into the tracheal lumen. There after cannula was removed and initial dilator was passed over the guidewire for tracheal wall dilatation and removed. The Grigg's guidewire dilating forceps with jaws closed was advanced over the guidewire. Opening of the forceps allowed for dilation of tracheal wall. After formation of stoma, the Griggs dilator was removed keeping the guidewire in place. A cuffed tracheostomy tube was advanced over the tracheal guidewire. The guidewire was then removed. Tracheostomy tube was then connected to the ventilator.Placement of the tube was confirmed by auscultation of bilateral equal air entry, EtCo2 reading and airway pressures. Tracheostomy tube was then secured with help of straps in the kit. ASD

was performed with betadine and ETT was removed with continuous suctioning and duration of the procedure was noted.

In all groups, time after cleaning and draping to the skin incision was noted (Assessment time). Also, time from skin incision to the placement and confirmation of the tracheostomy tube was noted (Procedure time). Intra procedural and post procedural complications were noted and post tracheostomy tube insertion chest radiograph taken after 2 hours to note position of tracheostomy tube and complications like pneumothorax. In case of any difficulty during Hybrid Tracheostomy procedure, it was converted to Classical Surgical Tracheostomy by expert assistance.

DATA COLLECTION:

Baseline demographic data (age, sex, weight, height)

Identification of landmarks

Assessment time

Site of needle insertion

Number of attempts for successful and uneventful needle insertion

Number of attempts for successful and uneventful tracheostomy tube insertion

Procedure time

Complications arising during the procedure.

Post procedure complications.

Post insertion chest radiograph after 2 hours of the procedure (to note complications like pneumothorax)

Need for conversion to other tracheostomy technique.

PRIMARY OUTCOME

Duration of procedure for successful placement of tracheostomy tube

SECONDARY OUTCOMES

1. Adverse events during transfer of patients to and from ICU to OT.

2. Patients in both groups are compared for early complications:

Haemorrhage

Infection

Emphysema

Tube obstruction

Early tube displacement

Esophageal injury

STATISTICAL ANALYSIS

Data was described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. To determine whether the data was normally distributed, a Kolmogorov-Smirnov test was used. Comparison of the quantitative variables between the study groups was performed using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square ($\chi 2$) test was performed and fisher exact test was used when the expected frequency was less than 5. A probability value (p value) less than 0.05 was considered statistically significant. A probability value (p value) less than 0.05 was considered statistically significant. All statistical calculations were done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows**.**

OBSERVATIONS AND RESULTS

This prospective randomized study which was conducted in Department of anesthesiology, DMCH Ludhiana after approval by Institutional Ethics Committee on patients age 18 years or above of either sex, needing tracheostomy during time period of one year from September 2022 to August 2023.The patients were randomly allocated into two study groups by computer generated random numbers contained in sequentially sealed envelopes. Patients were divided into two groups Hybrid tracheostomy (HT) and percutaneous dilatational tracheostomy (PDT).

The study aimed to compare Hybrid Tracheostomy with Percutaneous Dilatational Tracheostomy in terms of:

- Duration of Procedure
- Complications and adverse events(upto 7 days)

Group HT: Hybrid tracheostomy

Group PDT: Percutaneous Dilatational Tracheostomy

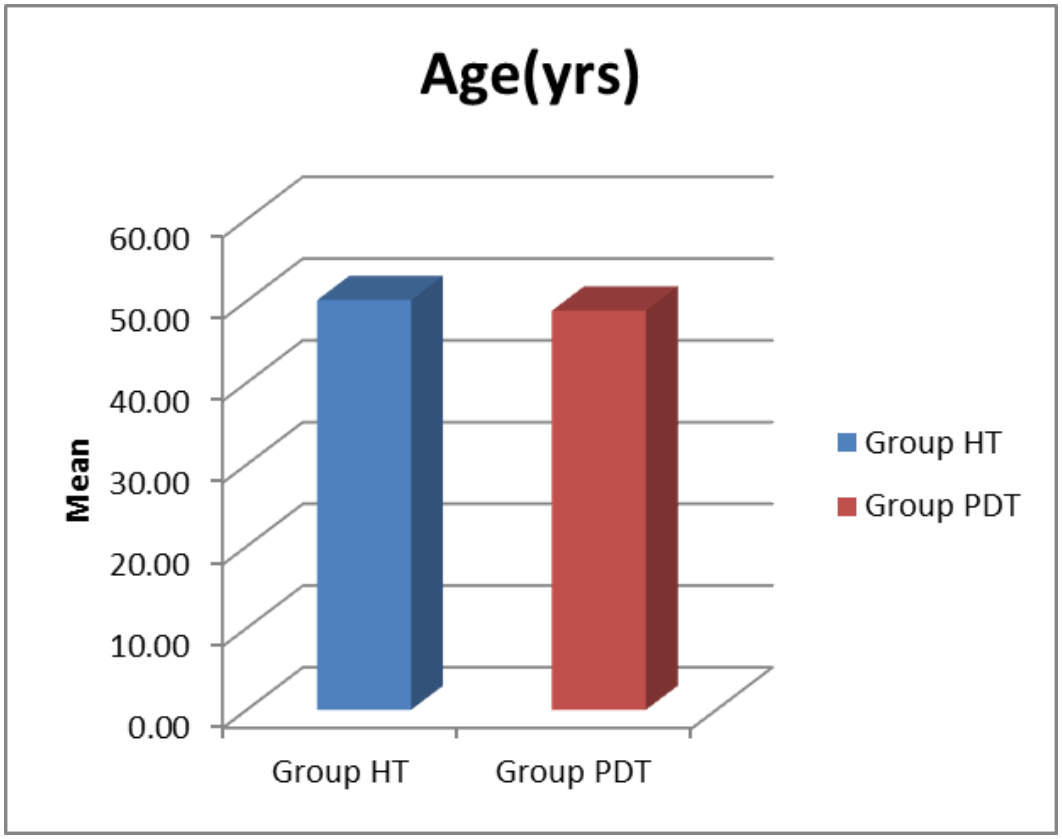
DEMOGRAPHIC DATA

AGE(YEARS)

The mean age of patient in group HT was 50.12 +/- 15.22 years and mean of patient in group PDT was 48.83 +/-18.42 years. There was no statistical difference between both groups with p value of 0.820.

TABLE 1: AGE(YEARS)

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
Age(yrs)	50.12	15.22	48.83	18.42	-0.228	0.820



FIGUREI: AGE(YEARS)

HEIGHT(METERS)

The mean height of patients in group HT was 1.69 +/- 0.08 meters and in group PDT was 1.72+/-0.07 meters. The difference in the mean height was not statistically significance between both groups with p value of 0.060.

TABLE2.HEIGHT(METERS)

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
Height(m)	1.69	0.08	1.72	0.07	-1.883	0.060

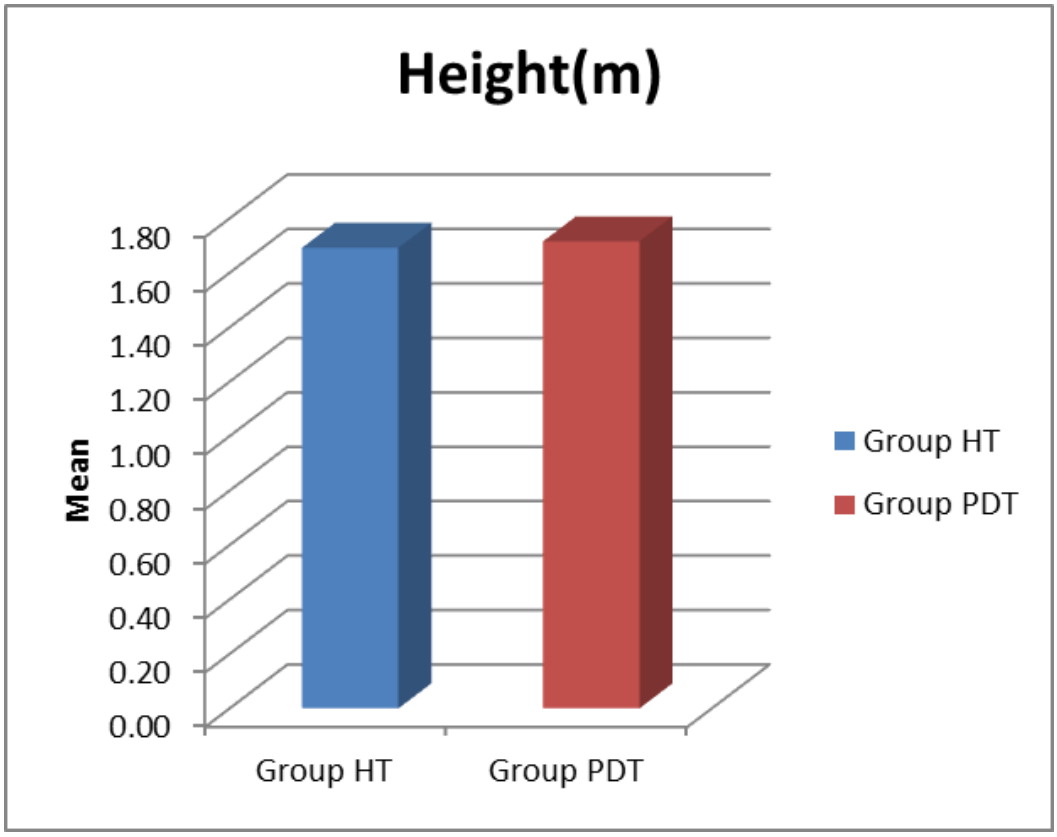


FIGURE2: HEIGHT(METERS)

WEIGHT(kILOGRAMS)

The mean weight of patient in group HT was 73.95 +/-10.4 kg and in PDT group was 71.45+/-10.20 kgs. Thedifference in mean weight was not statistically significant between both groups with p value of 0.115.

TABLE 3: WEIGHT(KILOGRAMS)

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
Weight (Kg)	73.95	10.04	71.45	10.20	-1.576	0.115

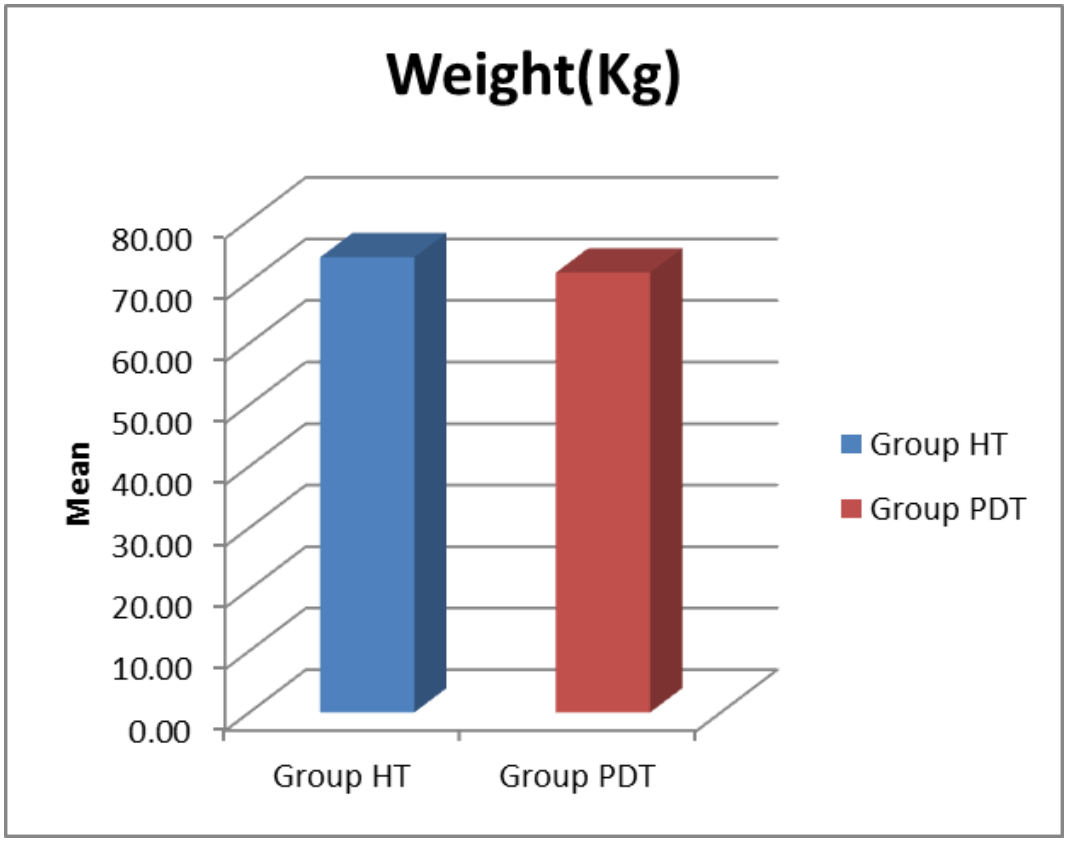


FIGURE3: WEIGHT(KILOGRAMS)

GENDER

In group HT 17.3% Patients were female and 82.7% of the patients were male and in group PDT 10.7% patients were female and 89.3% of the patients were male respectively. There was no statistical significance between both groups with respect to gender distribution with p value of 0.347.

TABLE 4: SEX DISTRIBUTION

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Sex	F	13	17.3%	8	10.7%	21	1.384	0.347
	M	62	82.7%	67	89.3%	129		
Total		75	100.0%	75	100.0%	150		

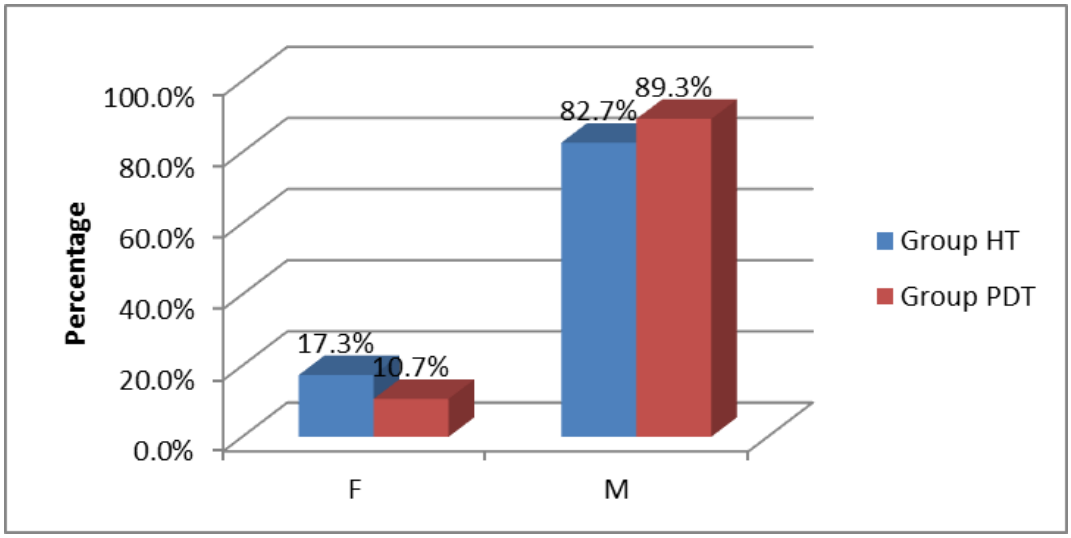


FIGURE4: SEX DISTRIBUTION

NECK CIRCUMFERENCE, STERNMENTAL DISTANCE AND THYROMENTAL DISTANCE

The mean neck circumference was 34.84+/-1.60 in group HT and 34.55+/-1.46 cm in group PDT, there was no statistical difference between both groups with p value of 0.356

The mean sternomental distance was 12.61 +/- 0.12 cm in group HT and 12.63 +/-0.11 cm in group PDT, there was no statistical difference between both groups with p value of 0.222

The mean thyromental distance was 6.55 +/- 0.17 in group HT and 6.55+/-0.37cm in group PDT, there was no statistical significance between both groups with p value of 0.217.

TABLE5: NECK CIRCUMFERENCE, STERNOMENTAL DISTANCE AND THYROMENTAL DISTANCE

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
Neck circumference(cm)	34.84	1.60	34.55	1.46	-0.922	0.356
Steromental distance(cm)	12.61	0.12	12.63	0.11	-1.222	0.222
Thyromental distance(cm)	6.55	0.17	6.55	0.37	-1.233	0.217

SOFA SCORE

SOFA (Sequential Organ Failure Assessment) scores include following parameters: PaO2(mmHg), GCS (Glasgow coma score), mean arterial pressure(mmHg), platelet count (10^3/ul), serum creatinine(mg%). Therewas no statistical difference in both groups in any parameter of SOFA scores.

TABLE 6: SOFA SCORE

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
PaO2(mm Hg)	131.71	64.76	135.44	60.05	-0.401	0.689
Glasgow coma score (/15)	5.53	2.13	5.31	1.97	-0.533	0.594
Mean arterial pressure (mm Hg)	94.35	18.64	95.16	14.31	-0.612	0.541
Platelet counts(103/ul)	197.19	84.34	193.26	73.03	-0.077	0.939
Serum creatine(mg%)	0.98	0.91	1.02	0.70	-1.322	0.186

Both the groups were comparable in terms of platelet counts, coagulation profile, serum urea levels and serum electrolytes, having no statistically significant difference.

TABLE 7: OTHER LABORTAORY PARAMETERS

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
PLATELET COUNT	200.72	83.53	196.79	70.03	-0.009	0.992
PTI	13.71	12.55	12.80	2.30	-1.273	0.203
INR	1.15	0.17	1.17	0.24	-0.489	0.625
HAEMOGLOBIN	11.01	1.63	11.07	1.67	-0.132	0.895
CREATNINE	0.98	0.91	1.01	0.69	-1.205	0.228
UREA	41.29	26.17	44.79	35.62	-0.259	0.795
SERUM SODIUM	140.37	4.79	140.36	4.81	-0.279	0.780
SERUM POTASSIUM	4.29	3.97	4.29	3.57	-0.055	0.957
SERUM CHLORIDE	99.89	11.73	99.73	12.25	-0.522	0.602

INDICATIONS OF TRACHEOSTOMY

The indications of tracheostomy were:airwayprotection, failure to wean, prolonged ventilation, respiratory distress, securing airway,weaning, and airway protection.The indications of tracheostomy was not statistically significant between both groups HT and PDT with p value of 0.100.

TABLE 8: INDICATIONS OF TRACHEOSTOMY

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Indications of tracheostomy	AIRWAY PROTECTION	38	50.7%	50	66.7%	88	10.646	0.100
	FAILURE TO WEAN	2	2.7%	0	0.0%	2		
	PROLONGED VENTILATION	15	20.0%	5	6.7%	20		
	RESPIRATORY DISTRESS	1	1.3%	0	0.0%	1		
	SECURE AIRWAY	15	20.0%	13	17.3%	28		
	WEANING	2	2.7%	3	4.0%	5		
	WEANING AND AIRWAY PROTECTION	2	2.7%	4	5.3%	6		
Total		75	100.0%	75	100.0 %	150		

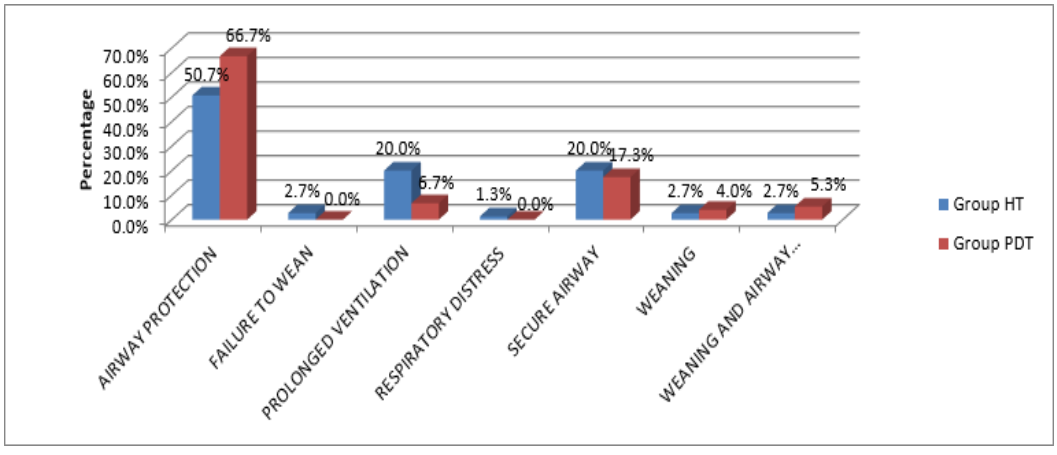


FIGURE 5: INDICATIONS OF TRACHEOSTOMY

CERVICAL SPINE INJURY

Out of total number of patients who underwent hybrid tracheostomy 3(4%) patients had cervical spine injury compared to 1(1.3%) patient in group PDT.There was no statistical difference between both groups with p value of 0.311 as shown in table 9.

TABLE 9: CERVICAL SPINE INJURY

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Cervical Spine injury	NO	72	96.0%	74	98.7%	146	1.027	0.311
	YES	3	4.0%	1	1.3%	4		
Total		75	100.0%	75	100.0 %	150		

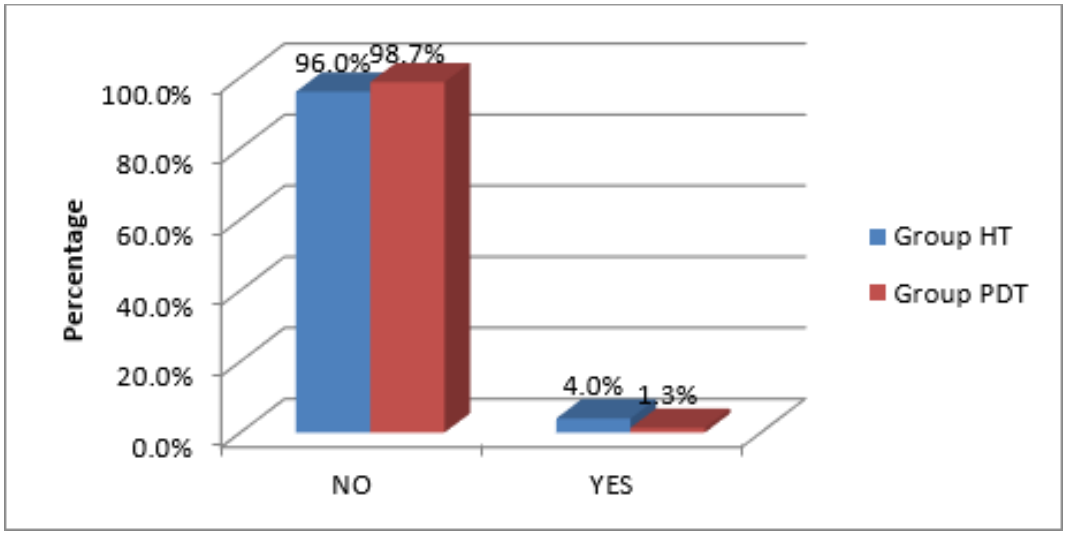


FIGURE 6: CERVICAL SPINE INJURY

DAYS ON MECHANICAL VENTILATION PRIOR TO TRACHEOSTOMY

The mean number of days on mechanical ventilation prior to tracheostomy were 6.03 +/-4.11 days in group HT and 5.72+/- 3.17 days in group PDT. There was no statistical difference between both groups with p value of 0.682.

TABLE 10: DAYS ON MECHANICAL VENTILATION PRIOR TO TRACHEOSTOMY

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
Days on mechanical ventilation prior to tracheostomy	6.03	4.11	5.72	3.17	-0.410	0.682

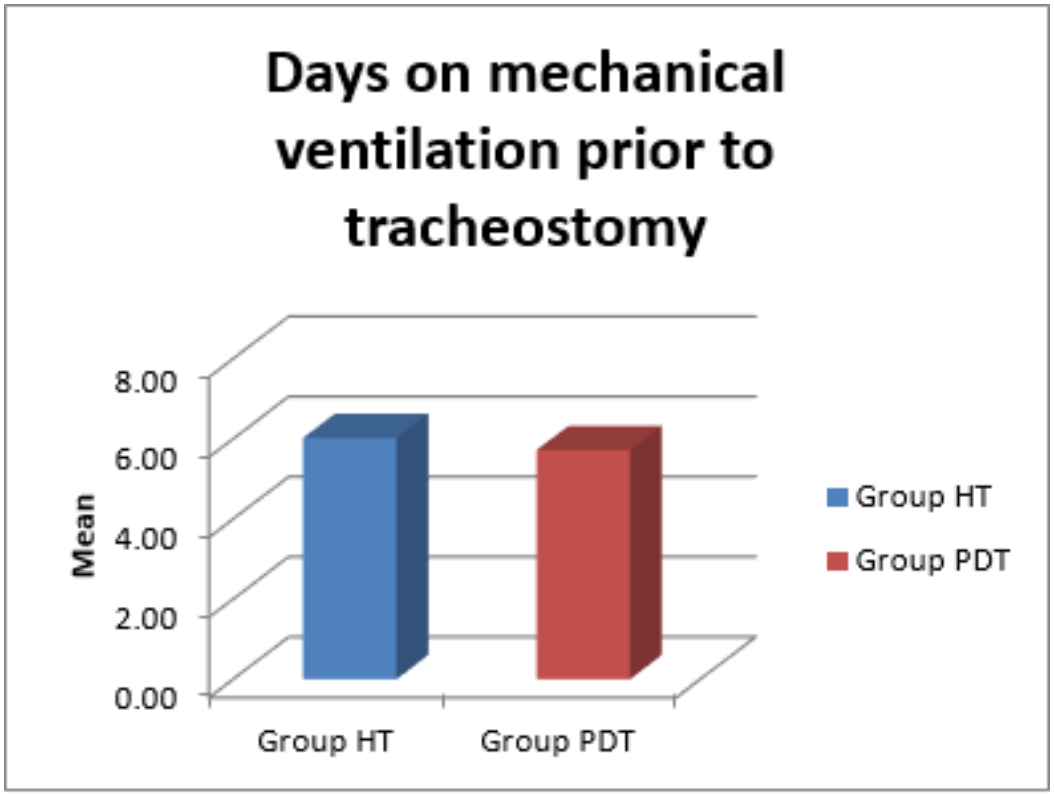


FIGURE 7: DAYS ON MECHANICAL VENTILATION PRIOR TO TRACHEOSTOMY

HEMODYNAMIC AND VITALS PARAMETERS

Vital parameters such as heart rate, systolic arterial pressure (SAP), Mean arterial pressure (MAP), Oxygen saturation (sPO2), Respiratory rate (RR) are noted. Preprocedural readings were taken as baseline and after that all readings were taken every 5 minstill procedure and then every 15 mins post procedure on day 1. Preprocedural baseline data was comparable in both groups.

There was no hemodynamic compromise in both groups during and after the procedure.

Preprocedural vitals HR, SBP, MAP, SpO2 and RR showed no statistical difference between both groups.

TABLE 11: PREPROCEDURAL VITALS

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
PRE_HR	88.41	14.97	90.65	17.45	-0.661	0.509
PRE_SBP	130.73	15.84	129.88	17.56	-0.494	0.622
PRE_MAP	94.11	10.49	94.13	12.01	-0.344	0.731
PRE_SPO2	99.29	0.97	99.28	1.37	-0.357	0.721
PRE_RR	18.60	3.97	18.93	3.24	-1.143	0.253

Intraprocedural vitals at 0 min of procedure showed no significant difference between HR, SBP, MAP and RR.

TABLE 12: VITALS AT 0 MIN OF PROCEDURE

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
AT 0 MIN_HR	88.83	15.14	90.95	17.37	-0.719	0.472
AT 0 MIN_SBP	131.53	13.97	131.13	17.70	-0.158	0.874
AT 0 MIN_MAP	94.35	9.97	94.51	9.89	-0.233	0.816
AT 0 MIN_SPO2	99.24	1.00	99.39	0.87	-0.763	0.445
AT 0 MIN_RR	18.51	3.81	18.93	3.21	-0.809	0.418

Intraprocedural vitals at 5 min showed no statistical significance in both groups for HR, SBP, MAP and RR.

TABLE 13: INTRAPROCEDURAL VITALS AT 5 MIN OF PROCEDURE

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
AT 5 MIN_HR	89.41	14.24	90.88	16.53	-0.476	0.634
AT 5 MIN_SBP	131.35	15.19	130.89	17.38	-0.254	0.799
AT 5 MIN_MAP	94.83	10.11	94.67	9.63	-0.043	0.965
AT 5 MIN_SPO2	99.12	1.37	99.33	1.02	-0.908	0.364
AT 5 MIN_RR	18.63	3.81	18.88	3.07	-0.742	0.458

Postprocedural vitals showed no statistical difference between both groups for HR,SBP.MAP.SpO2 and RR.

TABLE 14: POST PROCEDURAL VITALS (15 MINS POST PROCEDURE)

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
POST_HR	89.09	13.81	89.93	15.68	-0.009	0.992
POST_SBP	132.57	13.89	130.52	16.75	-0.768	0.442
POST_MAP	95.13	10.74	94.44	10.23	-0.269	0.788
POST_SPO2	99.25	1.46	99.51	1.52	-1.237	0.216
POST_RR	21.19	23.76	19.07	3.53	-1.005	0.315

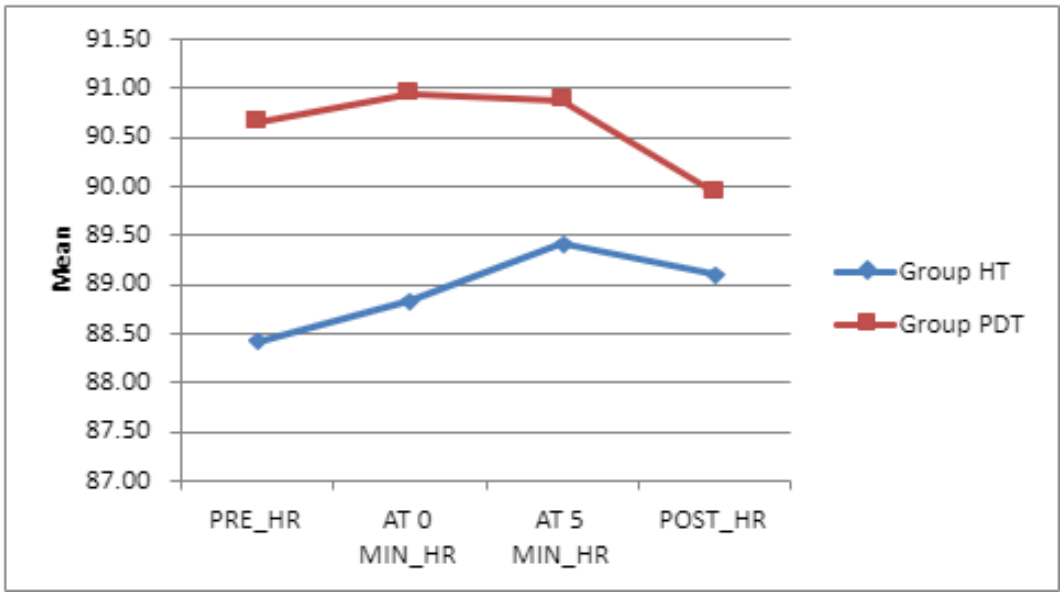


FIGURE 8: TRENDS IN HEART RATE BETWEEN HT AND PDT GROUP

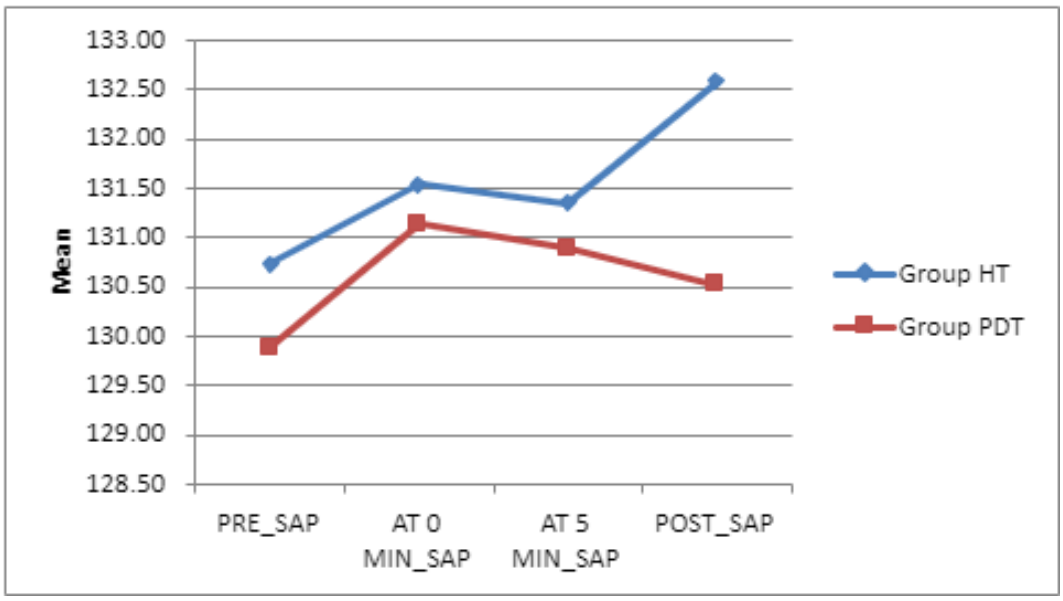


FIGURE 9: TRENDS IN SYSTOLIC BLOOD PRESSURE BETWEEN HT AND PDT GROUP

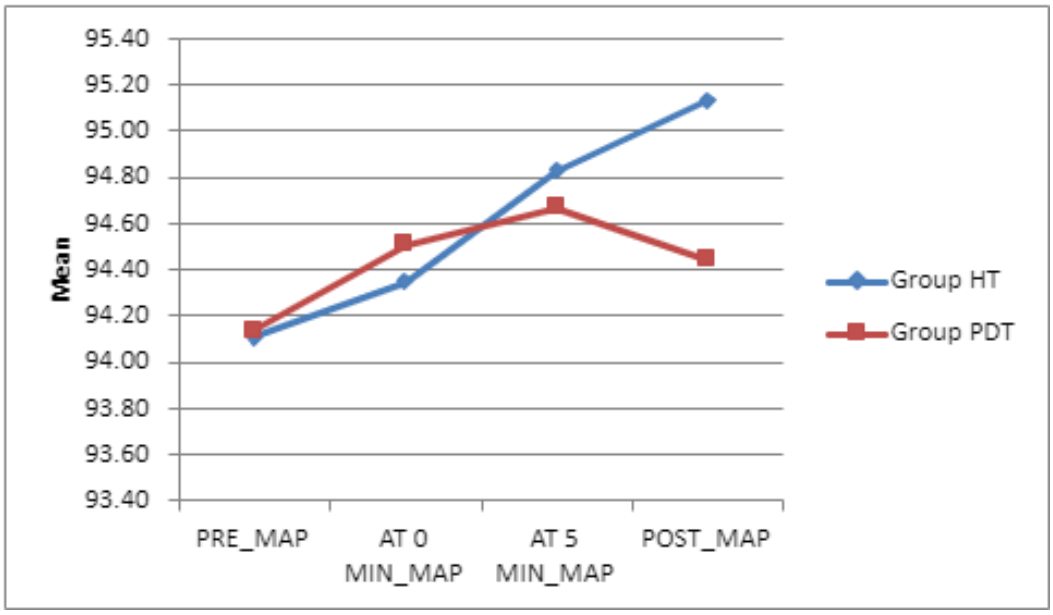


FIGURE 10: TRENDS IN MEAN ARTERIAL PRESSURE BETWEEN HT AND PDT GROUP

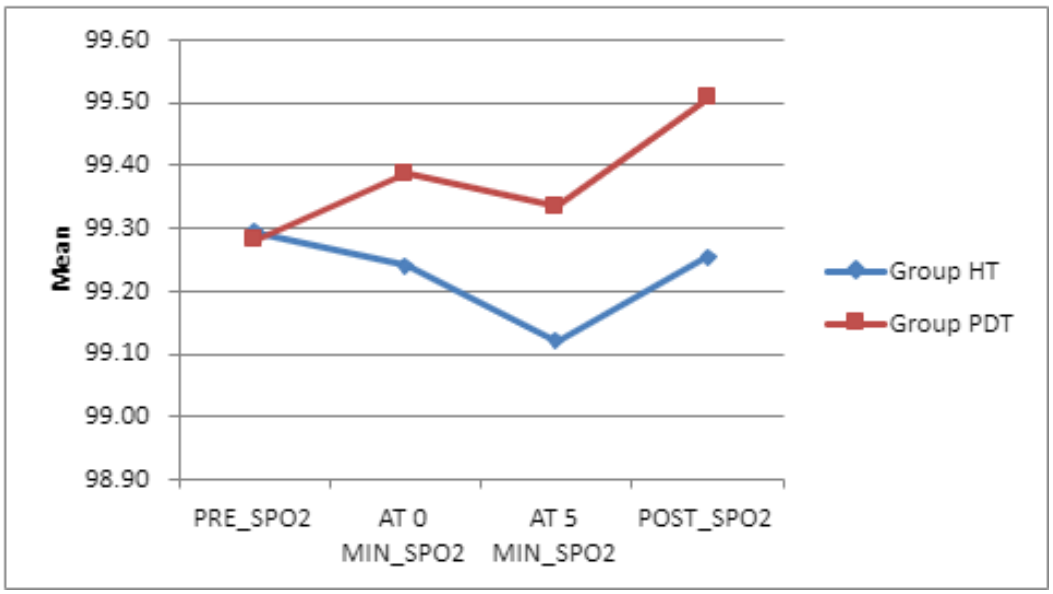


FIGURE 11: TRENDS IN OXYGEN SATURATION BETWEEN HT AND PDT GROUP

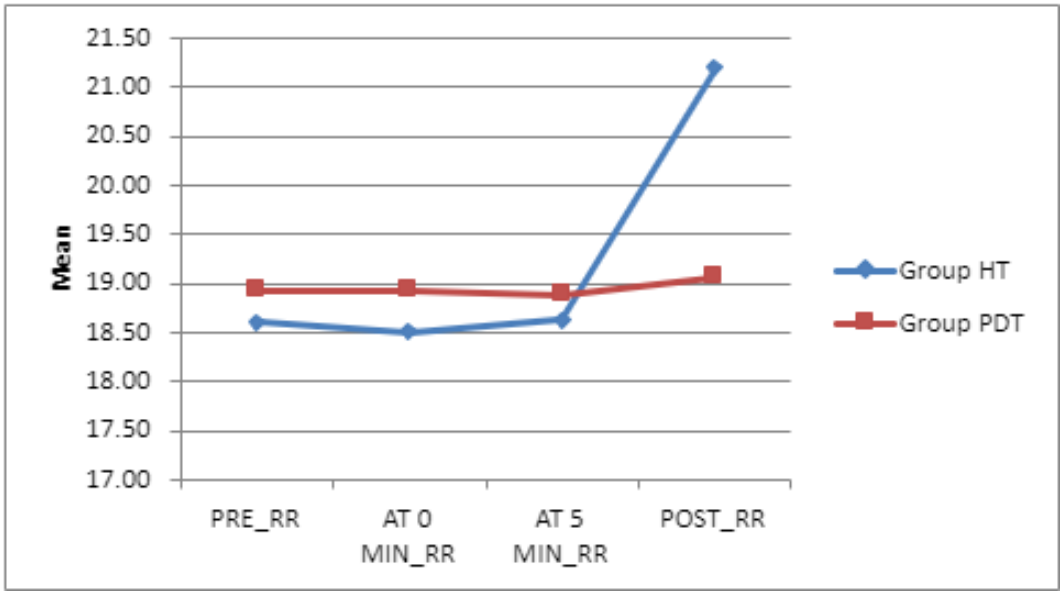


FIGURE 12: TRENDS IN RESPIRATORY RATE BETWEEN HT AND PDT GROUP

NECK SURFACE LANDMARK PALPATION (PRIOR TO CLEANING AND DRAPING)

There was difficulty inpalpation of neck surface landmark in 2(2.7%) cases in group HT and 1(1.3%) case in group PDT.There was no statisticallysignificant difference between both groups with p value of 0.513.

TABLE 15: NECK SURFACE LANDMARK PALPABLE (PRIOR TO CLEANING AND DRAPING)

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Neck Surface landmark palpable(cm)	NO	2	2.7%	1	1.3%	3	1.33	0.513
	YES	73	97.3%	74	98.7%	147		
Total		75	100.0 %	75	100.0 %	150		

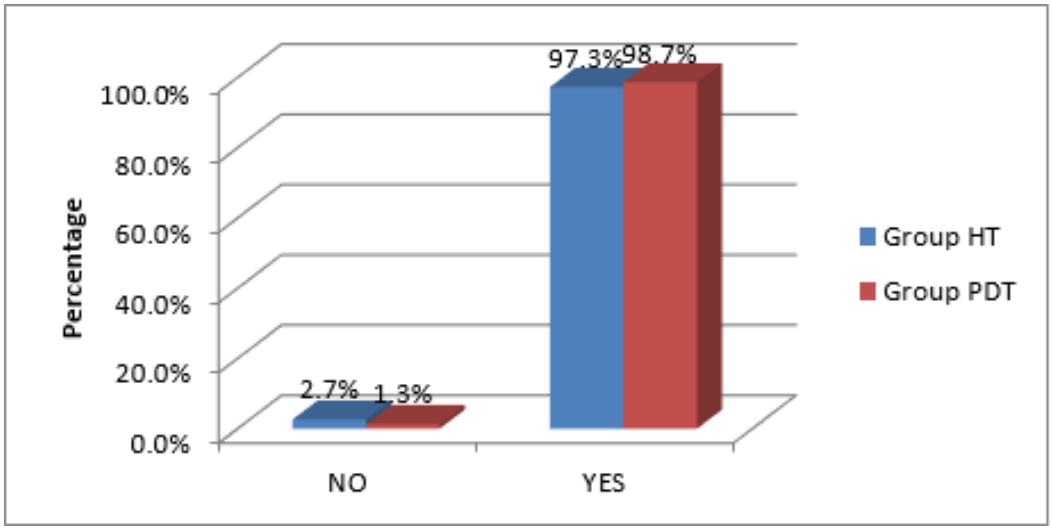


FIGURE13: NECK SURFACE LANDMARK PALPABLE

IDENTIFAICATION OF LANDMARK BY PALPATION (AFTER CLEANING AND DRAPING)

There was difficulty in identification of landmark by palpation in 2(2.7%) cases in group HT and there was no difficulty inidentification of landmark by palpation in group PDT, with no statistical difference between both groups with p value of 0.497.

TABLE16: IDENTFICATION OF LANDMARK BY PALPATION (AFTER CLEANING AND DRAPING)

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
IDENTIFICATION OF LANDMARK BY PALPATION	NO	2	2.7%	0	0.0%	2	2.027	0.497
	YES	73	97.3 %	75	100.0 %	148		
Total		75	100.0 %	75	100.0 %	150		

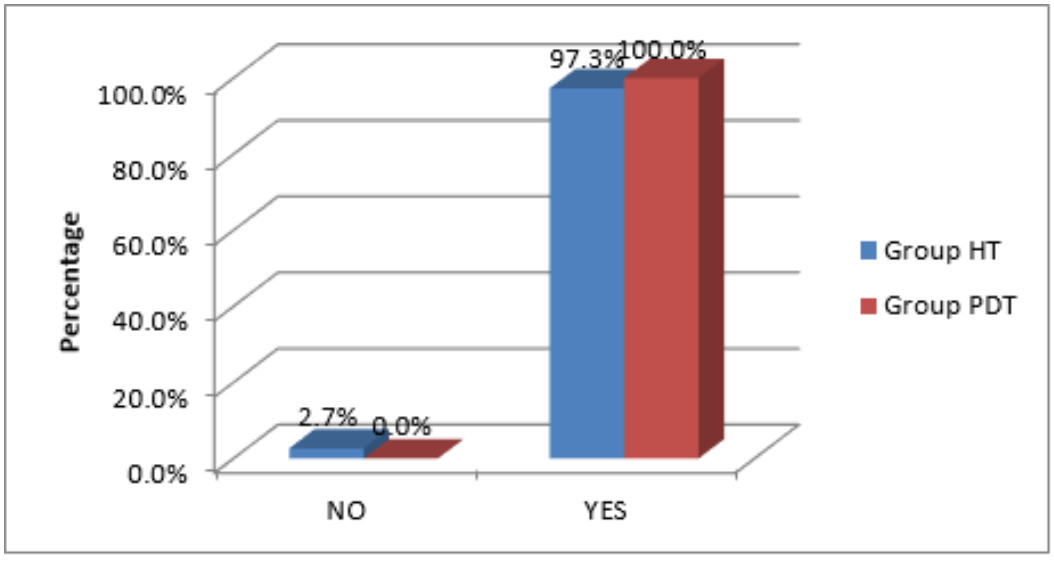


FIGURE 14: IDENTIFICATION OF LANDMARK BY PALPATION

ASSESSMENT TIME

The mean assessment time in group HT WAS 1.01+/-0.12 min and the mean assessment time for group PDT was 1.0 min. There was no statistical difference between both groups with p value of 0.317.

TABLE17:ASSESSMENT TIME

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
ASSESSMENT TIME	1.01	0.12	1.00	0.00	-1.000	0.317

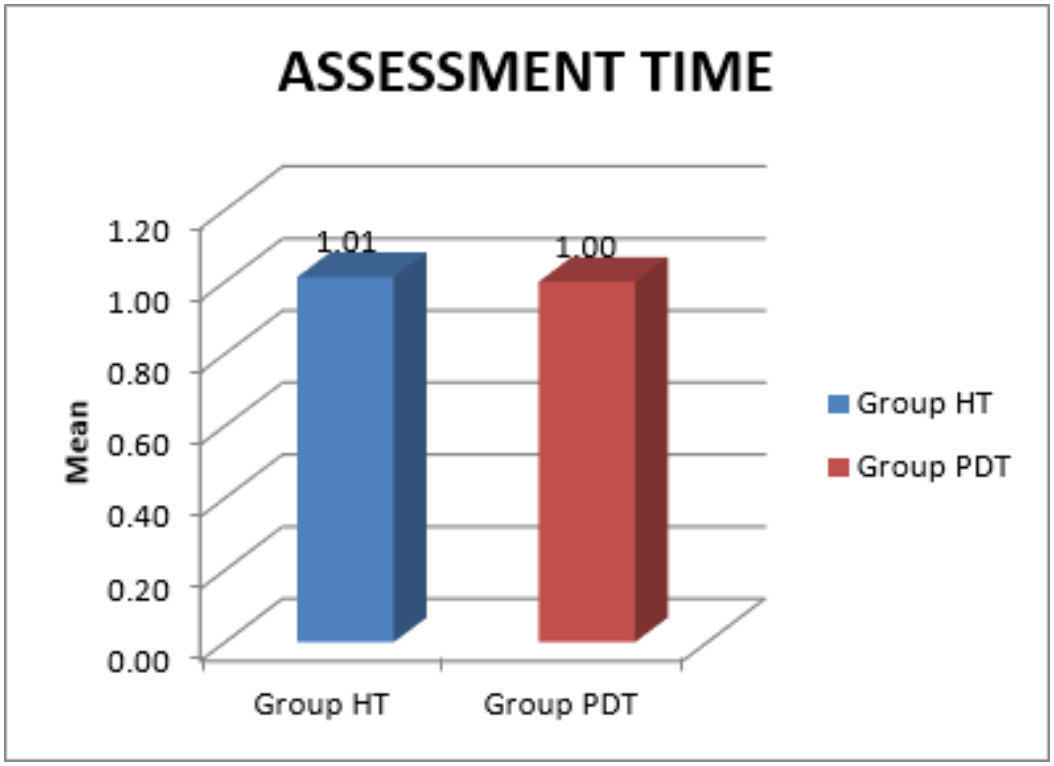


FIGURE15: ASSESSMENT TIME

PROCEDURE TIME

The mean procedure time for group HT was 2.99+/- 0.70 min and the mean time for group PDT was 2.64 +/- 0.46 min. There was statistical difference betweenboth groups with p value of 0.001.

TABLE 18: PROCEDURE TIME

	Group HT		Group PDT		Z	p-value
	Mean	SD	Mean	SD		
PROCEDURE TIME	2.99	0.70	2.64	0.46	-3.548	0.001

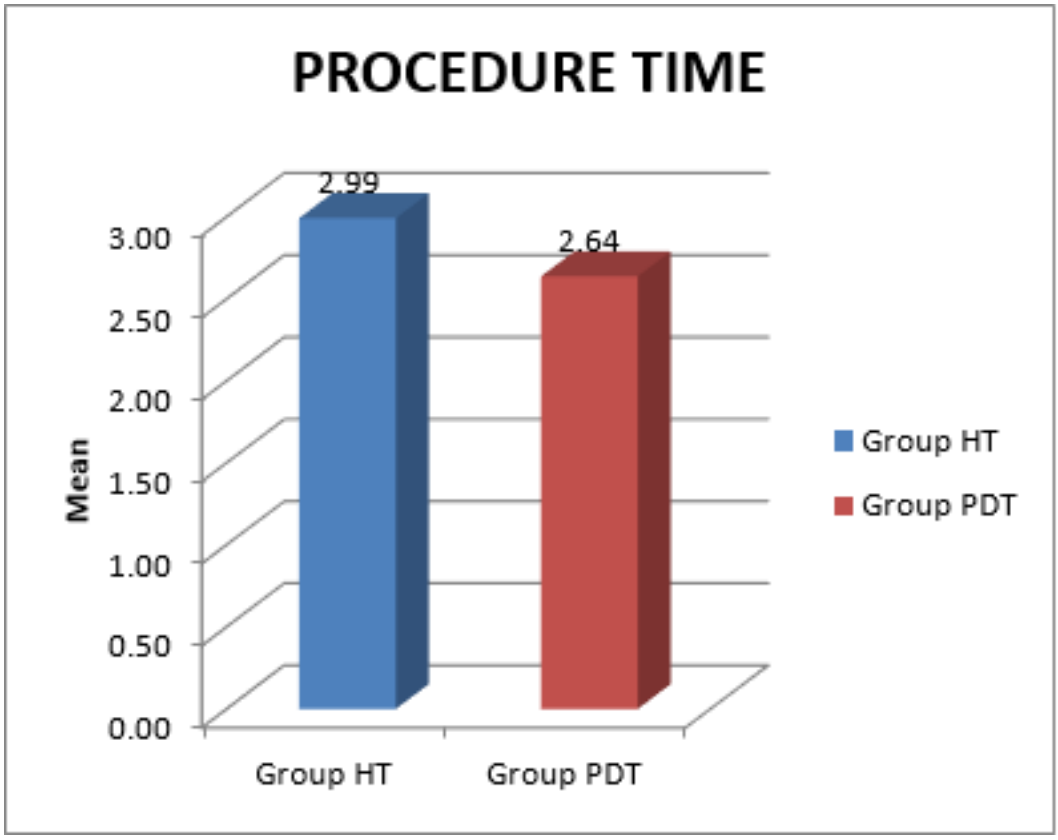


FIGURE 16: PROCEDURE TIME

SITE OF NEEDLE INSERTION

The site of needle insertion was T2 to T3 in both HT and PDT group with no statistically significant difference both groups with p value of 1.0.

TABLE 19: SITE OF NEEDLE INSERTION

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
SITE OF NEEDLE INSERTION	T2 to T3	75	100.0 %	75	100.0 %	150	0.000	1.000
	Any other	0	0.0%	0	0.0%	0		
Total		75	100.0 %	75	100.0 %	150		

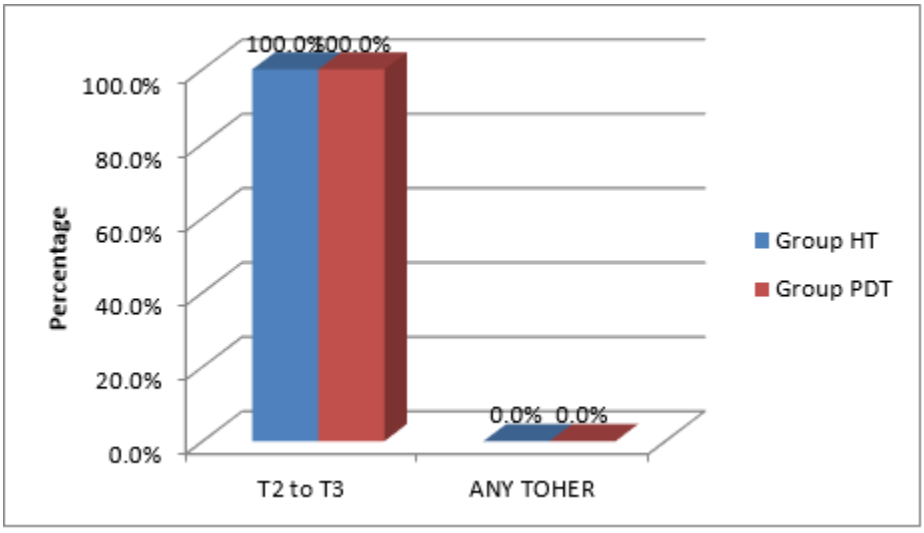


FIGURE 17: SITE OF NEEDLE INSERTION

NUMBER OF ATTEMPTS OF SUCCESSFUL NEEDLE AND TRACHEOSTOMY TUBE INSERTION

The number of cases of successful needle insertion in one first attempt was 98.7% in group HT and 97.3% in group PDT showing no statistical significance between both groups with p value of 0.561.

TABLE 20: NUMBER OF ATTEMPTS OF SUCCESSFUL NEEDLE INSERTION

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
NUMBER OF ATTEMPTS FOR SUCCESSFUL NEEDLE INSERTION	1	74	98.7%	73	97.3%	147	0.338	0.561
	2	1	1.3%	2	2.7%	3		
Total		75	100.0 %	75	100.0 %	150		

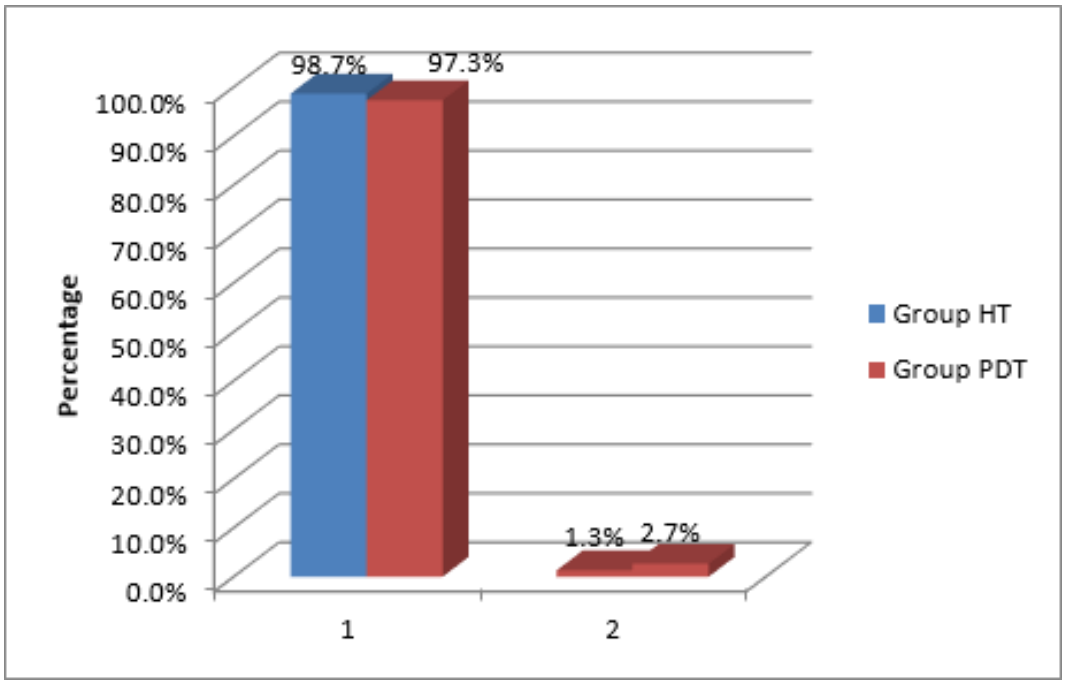


FIGURE18: NUMBER OF ATTEMPTS OF SUCCESSFUL NEEDLE INSERTION

The number of cases of successful tracheostomy tube insertion in one attempt was 98.7% in group HT and was 97.3% in group PDT showing no statistical significance between both groups with p value of 0.561

TABLE 21: NUMBER OF ATTEMPTS OF SUCCESSFUL TRACHESOTOMY TUBE INSERTION

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
NUMBER OF ATTEMTS FOR SUCCESSFUL TRACHEOSTOMY TUBE	1	74	98.7%	73	97.3%	147	0.338	0.561
	2	1	0.0%	2	0.0%	3		
Total		75	100.0 %	75	100.0 %	150		

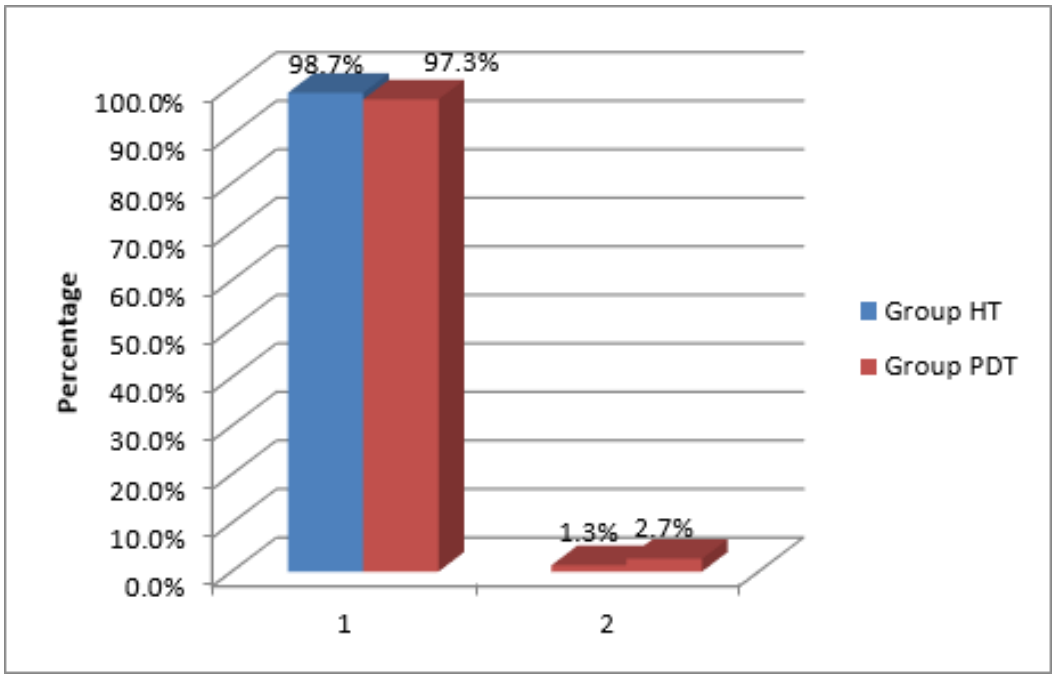


FIGURE19: NUMBER OF ATTEMPTS OF SUCCESSFUL TRACHEOSTOMY TUBE INSERTION

PROCEDURAL COMPLICATIONS

There were no major complications in both HT and PDT group showing no statistical significance between both groups with p value of 1.0 as shown in table 21.

TABLE 22: PROCEDURAL COMPLICATIONS

PROCEDURAL COMPLICATIONS		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
MINOR BLEEDING	NO	75	100.0%	75	100.0%	150	0.000	1.000

						Total	Chi-square value	p-value
BLEEDING REQUIRING INTERVENTION	NO	75	100.0%	75	100.0%	150	0.000	1.000
SURGICAL EMPHYSEMA	NO	75	100.0%	75	100.0%	150	0.000	1.000
PNEUMOTHORAX	NO	75	100.0%	75	100.0%	150	0.000	1.000
TRACHEAL INJURY	NO	75	100.0%	75	100.0%	150	0.000	1.000
ESOPHAGEAL INJURY	NO	75	100.0%	75	100.0%	150	0.000	1.000
PARATRACHEAL PLACEMENT/FALSE TRACT PLACEMENT	NO	75	100.0%	75	100.0%	150	0.000	1.000
HEMODYNAMIC INSTABILITY	NO	75	100.0%	75	100.0%	150	0.000	1.000
DESATURATION	NO	75	100.0%	75	100.0%	150	0.000	1.000
RUPTUREED ETT CUFF	NO	75	100.0%	75	100.0%	150	0.000	1.000
ANY OTHER	NO	75	100.0%	75	100.0%	150	0.000	1.000

EVENTS DUTING TRANSFER FROM ICU TO OT

Out of 75 patients in HT group, 4 patients were shifted to and fro from ICU to OT but there was no event occurred during shifting of patient. In all 75 patients in group PDT, procedure was done at bedside.

TABLE 23: EVENTS DURING TRANSFER FROM ICU TO OT

EVENTS DURING TRANSFER TO AND FROM ICU TO OT		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
ACCIDENTAL DECANNULATION	NA	75	100.0%	75	100.0%	150	0.000	1.000
DESATUTRATION	NA	75	100.0%	75	100.0%	150	0.000	1.000
BLEEDING	NA	75	100.0%	75	100.0%	150	0.000	1.000
HEMODYNAMIC INSTABLITY	NA	75	100.0%	75	100.0%	150	0.000	1.000
ARRHYTHMIA	NA	75	100.0%	75	100.0%	150	0.000	1.000
ANY OTHER	NA	75	100.0%	75	100.0%	150	0.000	1.000
Total		75	100.0%	75	100.0%	150	0.000	1.000

POST PROCEDURE COMPLICATIONS

Post procedural complication was such as bleeding was seen in 15 cases. Out of 15 cases, 5(6.7%) cases were seen in group HT and 10(13.3%) cases of post procedure bleeding was seen in group PDT, there was no statistical significance difference between both groups with p value of 0.175.The other reported complication was pneumothorax which occurred in 1(1.3%) patient in group PDT for which chest tube was inserted.There was no statistical significance between both groups for pneumothorax with p-value of 0.316.

TABLE24: POST PROCEDURE COMPLICATIONS

		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
BLEEDING	YES	5	6.7%	10	13.3%	15	1.839	0.175
	NO	70	93.3%	65	86.7%	135		
SOFT TISSUE INJURY	NO	75	100.0%	75	100.0%	150		
ACCIDENTAL DECCANULATION/ TUBE DISPLACEMENT	NO	75	100.0%	75	100.0%	150		
ANY FINDING ON CHEST X RAYDONE AFTER 2 HRS	NO	75	100.0%	74	98.7%	149	1.007	0.316
	RIGHT PNEMOTHORAX	0	0.0%	1	1.3%	1		
ANY OTHER	NO	75	100.0%	75	100.0%	150		
Total		75	100.0%	75	100.0%	150		

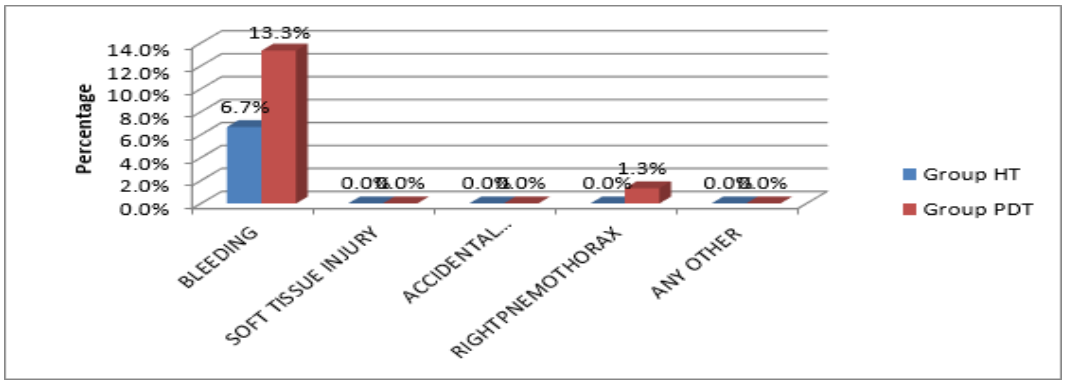


FIGURE 20: POST PROCEDURE COMPLICATIONS

POST PROCEDURE COMPLICATIONS REQUIRING INTERVENTION

Out of 10 patients in group PDT with post procedure bleeding, all required intervention formof keepingadrenaline soakedgauze and holding low molecular weight heparin if ongoing. And out of 5 patients in group HT require intervention such askeeping adrenaline soaked gauze kept and 1 patient group took DAMA.

TABLE 25: POST PROCDURE COMPLICATIONS REQUIRING INTERVENTION

POST PROCEDURE COMPLICATIONS_		Group HT		Group PDT		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
BLEEDING	2ND AND 3RD DAY ADR SAOKAED GAUZE KEPT	0	0.0%	1	1.3%	1	15.185	0.366
	3RD AND 4TH DAY ADR SAOKED GAUZE KEPT	0	0.0%	1	1.3%	1		
	3RD AND 4TH DAY ADR-SOAKED GAUZE KEPT	1	1.3%	0	0.0%	1		
	3RD AND 4TH DAY ADR-SOAKED GAUZE KEPT, CLEXANE HOLDED	0	0.0%	1	1.3%	1		
	3RD DAY ADR SAOKED GAUZE KEPT	0	0.0%	1	1.3%	1		
	3TH AND 4TH DAY ADR-SOAKED	1	1.3%	0	0.0%	1		

	GAUZE KEPT							
	4TH AND 5TH DAY ADR-SOAKED GAUZE KEPT	0	0.0%	2	2.7%	2		
	6TH AND 7TH DAY ADR-SOAKED GAUZE KEPT	0	0.0%	1	1.3%	1		
	BEEDING ON 2ND DAY	0	0.0%	1	1.3%	1		
	DAY 6, ADR SAOAKED GAUZE PIECE	1	1.3%	0	0.0%	1		
	DAY3, ADRSAOKED GAUZE PEICEKPET ANDHOLDED CLEXANE	1	1.3%	0	0.0%	1		
	YESDAY3, ADR-SOAKEDGAUZEPIECE	0	0.0%	1	1.3%	1		
	YES 5TH DAY ADR SAOKED GAUZE PIECE KEPT, CLEAXANE HOLDED	0	0.0%	1	1.3%	1		
	TOOK DAMA DAY 3	1	1.3%	0	0.0%	1		
	NO	70	93.3%	65	86.7%	135		
Total		75	100.0%	75	100.0%	150		

DISCUSSION

Tracheostomy is a commonly performedprocedure in patients requiringprolongedventilation.[32] Classical surgical tracheostomy (CST)is a standard surgical procedure performed bygeneral surgeons and otolaryngologist in operation theatre.CST has certain limitations such as need to shift patients from ICU to OT which can be challenging specially in hemodynamically unstable patients and increases the cost of procedure due to need of operation, requires more equipment and staff.

Since last few decades percutaneous dilatational tracheostomy(PDT) has been widely accepted as it can be performed bedside in ICU by intensivist thus overcoming limitation of CST of transferring of patient to OT.[33] However, PDT tracheostomy has certain limitations. It is difficult to performin patients of previous neck surgery, short neck, previous cervical spine surgery, morbid obesity and patients on anticoagulants.[34]

A new techniqueknown as hybrid tracheostomy (HT)combines the advantages of CST and PDT and can be performed in the ICU is becoming popular these days. It involves limited dissection of tissue by giving small incision and then inserting tracheostomy tube by direct visualization by seldinger technique like PDT.[31] Hybrid tracheostomy can be safely performed in patients with difficult neck anatomy, patients on anticoagulants and with reduced risk of serious complications such as hemorrhage due to dissection of tissue under vision.[19]

In spite of gaining popularity especially in COVID time, there is very less published literature on hybrid tracheostomy. We conducted this study to compare hybrid tracheostomy (HT) with percutaneous dilatational tracheostomy (PDT). The aim of our study was to compare the duration of procedure and early complications and adverse events (upto 7 days) in both groups.

Our study wasconductedwas prospective randomized study conducted on patients needing tracheostomyover a period of one year form September 2022 to August 2023.Out of 150 patients 75patients underwent HT. and 75 patients underwent PDT. Both the groups were comparable for demographic data such as age, height, weight and sex distribution showing no statistical difference between both groups.

Both groups were comparable in terms of neck circumference, sternomental distance and thyromental distance with no statistical significance.SOFA Score and other laboratory para parameters such as platelet count, coagulation profile, serum urea and electrolytes were compared in both group and showed no statistical significance.

Vitals parameters such as HR, SBP, MAP, spO2, RR were noted. Preprocedural vitals were taken as baseline.Patients in both groups remained hemodynamically stable both during and after procedure.

INDICATION OF TRACHEOSTOMY

The indications of tracheostomy in our study were: airway protection for low GCS (50.7% in HT group HT and 66.7% in group PDT), failure to wean (2.7% in group HT and 0.0% in group PDT), prolongedventilation (20.0% in group HT and 6.7%in group PDT), respiratory distress (1.3%in group HT and 0% in group PDT), securing airway (20.7% in group HT and17.3 % in group. PDT), weaning and airway protection (2.7% in group HT and 5.3 % in group PDT). The main indication for tracheostomy among both HT and PDT group in our studywas airway protection for low GCS.

In a study conducted by Vargas et al in 2013, the most common indication of tracheostomy was need of prolonged ventilation.This was international survey conducted online by European society of intensive care medicine

from May to October 2013 .439 physicians from 59 countries responded to this survey.[35]Nyanzi et al did a prospective cohort study in 2023 on 100 participants comparing tracheostomy indications and complications across two hospitals was done using Pearson chi square.The common indication of tracheostomy were pulmonary toilet(58%),anticipated prolonged intubation(42%),upperairway obstruction(36%),and airway protection(28%).In hospital most common indication among males was upper airway obstruction(93.7%) while airway protection was common indication among females (62.1% in one hospital .There was no gender disparity for indication of tracheostomy in other hospital. In comparison to this most common indication in our study was airway protection with gender difference.[36]

Cheung et al did study in 2014 on tracheostomy epidemiology, indications, technique and outcome. This study concluded that most common indication for tracheostomy was acute respiratory failure and need for prolonged ventilation in two third of cases and traumatic or neurologic injury requiring prolonged ventilation in remaining patients. Upper airway obstruction is least common indication of tracheostomy. This study showed prolonged ventilation as a more common indication of tracheostomy as compared to our study where most common indication was airway protection.[2]

The discrepancy in indication in most of the studies probably is due ambiguity in looking at the problem. Prolonged ventilation, acute respiratory failure and airway protection are spectral dimension of the same problem. In our study also these patient required prolonged ventilation but many patient were weaned off early using spontaneous modes but were not having adequate GCS for extubation. Probably in our study the most of the patients were neurosurgical patients who were weaned off from ventilation but required airway protection due to low GCS.

DAYS ON MECHANICAL VENTILATION PRIOR TO TRACHESOTOMY

Tracheostomy was performed in our study after mean of 6.03 days post intubation in group HT and 5.72 days in group PDT with p value of 0.682.The optimal timing of performing tracheostomy remains controversial. The definition of early versus late tracheostomy differs among studies, generally early tracheostomy is defined as tracheostomy performed within 3 to 10 days of mechanical ventilation and late tracheostomy after more 10 days of prior mechanical ventilation.

A meta-analysis conducted by Chorath et al in 2021 from 17 randomized trials with 3145 participants found that early tracheostomy was associated with lower Ventilator associated pneumonia rates, shorter duration of mechanical ventilation and ICU stay with no effect on all-cause mortality.[37] A meta-analysis by Andriolo et in 2015consists of 8 RCT's with 1977 participants showed lower mortality in early as compared to late tracheostomy with RR 0.83, 95%confidence interval (CI) 0.70 to 0.98, P value of 0.03. There was no significant difference noted for pneumonia but shorter duration of ICU stay was seen in early tracheostomy group compared to late tracheostomy (RR 1.29, 95% CI 1.08 to 1.55, p value of 0.006).[38]

However, there are no definitive guidelines that dictate timing of performing tracheostomy post intubation and this remains a subjective decision.

All the tracheostomies done in our study were early tracheostomies. The decision for early tracheostomy was taken after consultation with physicians of primary team

CERVICAL SPINE INJURY

Cervical spine is considered relative contraindication for bedside PDT. In our center being a large volume center and expertise, we are doing

bedside Hybrid and PDT with minimal extension of neck and no manipulation. Out of total number of patients who underwent tracheostomy 3(4.0%)patients in Hybrid Tracheostomy group had cervical spine injury and in PDT group out of all patients in PDT group 1(1.3%) patient had cervical spine injury.[39]

Patients with cervical spine injury often need prolonged ventilation as there is worsening of vital capacity due to respiratory muscle weakness, impairment in clearance of tracheobronchial secretions and risk of respiratory complications such as pneumonia or atelectasis. Therefore, tracheostomy is performed early in patients with cervical spine injury.

Wang et al did a study on tracheostomy in 2021 on spinal cord injured patients (comparison of clinical outcomes of tracheostomy in patients with acute Cervical Spinal Cord Injury (CSCI) at different timing).The study included 124 CSCI patients divided into 3 groups: early group (< 4 days from initial intubation), medium group (4 to 10 days of intubation) and late group (> 10 days from initial intubation) with 46, 38 and 40 patients in these groups respectively. They concluded that early to medium tracheostomy suffered less ICU stay than late tracheostomy and had improved clinical and functional outcomes.[40]

There is difficulty in performing tracheostomy is cervical spine injury patient due to difficulty in extending neck thus assessing landmarksfor tracheostomy is difficult.Presence of recent cervical spine fixation,recent scar and risk of cross contamination makes it difficult to perform tracheostomy.[41] In our study there was 1 patient in HT group and 3 patient in group PDT who had cervical spine injury.We were able to perform tracheostomies uneventfully in these patients.

NUMBER OF ATTEMPTS OF SUCCESSFUL NEEDLE INSERTION AND TRACHEOSTOMY TUBE INSERTION

In our study the number of cases with successful needle insertion in one attempt was98.7% in group HT and 97.3% in group PDT showing no statistical significance between both groups with p value of 0.561.The number of cases of successful tracheostomy tube insertion in one attempt was 98.7% in group HT and 97.3% in group HT showing no statistical difference between both groups with p value of 0.561.

Rudas et al did a study comparing landmark versus ultrasound guided percutaneous dilatational tracheostomy showing first pass success in 87% of cases inultrasound guided group and 58% of first pass success in landmark group showing no statistical significance with p value of 0.028.[42]

There are limited studies comparing the number of attempts of successful needle and tracheostomy tube insertion in hybrid versus percutaneous dilatational tracheostomy but there are studies on comparing landmark versus ultrasound needle insertion.With ultrasound guidance decreasing thenumber of attempts for successful needle placement.[43, 44]

In our study hybrid and percutaneous dilatational tracheostomy was conducted using identification of landmark by palpation without ultrasound guidance. The difference in the number of attempts for needle and tracheostomy tube insertion showed no statistically difference between both groups. The high rate of successful needle puncture and tracheostomy in first attempt can be explained by the experience and expertise of the doctor performing the procedure.

DURATION OF PROCEDURE

Assessment time: This was defined as the time after cleaning and draping to skin incision.

Procedure time: This was defined as the time from skin incision to the placement and confirmation of the tracheostomy tube insertion.

Total procedure time was the combination of assessment time and procedure time.

The mean assessment time for group HT was 1.01 +/- 0.12 min and 1.0 +/-0 min in group PDT showing statistical significance with p value of 0. 0317.The mean procedure time for group HT was 2.99 +/-0.70 min in group HT and in group PDT was 2.64 +/- 0.46 min showing statistical significance between both groups with p value of 0.001. Both mean assessment time and mean procedure time was comparable in both groups with procedure time showing statistical significance.

Nikbakhsh et. al did prospective randomized controlled trial in 2019 comparing semi surgical percutaneous dilatation tracheostomy (SSPDT) versus conventional percutaneous dilatational tracheostomy (CPDT) in 160 patients. The duration of procedure was 5.16+/-1.72 mins in SSPDT group and 6.42+/-1.71 in CPDT group($p<0.001$). Most important finding of this study was the duration of procedure, which was shorter in SSPDT as compared to CPDT.As per this study the main reason for short duration of procedure in SSPDT is wider skin incision and performing tracheal puncture by directly visualizing trachea. This is unlike our study in which the meantime taken for procedure was more in hybrid tracheostomy as compared to percutaneous dilatational tracheostomy.[30]

Dauenkang et al did a study in 2021 on safety and feasibility of hybrid tracheostomy by collecting data from 55 patients who underwent hybrid tracheostomy without bronchoscopic guidance. The average duration of procedure in this study was 13.3 minutes. This study concluded that hybrid tracheostomy could be conducted in short time of 13 min without any major bleeding event.The mean time taken for HT was 3.82 +/- 1.31mins which is much shorter than other studies.[21]

The difference in the duration of the procedure in different studies can be due to various factors such of experience of person doing procedure, single or multiple people assisting the procedure, type of assistance needed, difficult anatomy of neck of patient.

COMPLICATIONS

Patients which were shifted to OT from ICU, events during transfer were noted. Out of 75 patients in group HT, 4 patients were shifted to and fro from ICU to OT but there was no adverse hemodynamic event or displacement of tracheostomy tube noted during transfer of patient. All cases in group PDT group was done at bedside.

Post procedure bleeding was seen in 10 cases(13.13%) in group PDT and 5(6.7%) group HT, showing no statistically difference in both groups with p value of 0.175.In these patients hemostasis is achieved by using pressure with gauze soaked in lidocaine with adrenaline of bleeding site. Overall, there was no significant clinical difference as bleeding was most of the times minor ooze.

There was one case of pneumothorax which occurred in group PDT (0.8%) and none in group HT showing no statistically difference between both group with p value of 0.241.This patient was managed by inserting chest tube

Nikbakhah et al did a prospective randomized trial in 2021 on Semi surgical Percutaneous Dilatational Tracheostomy (SSPDT) study versus Conventional Percutaneous Dilatational Tracheostomy (CPDT) on 160 patients with 80 patients in each group. The complication rate was 8.75% in SSPDT group and 20%in CPDT group with p value of 0.043. In this study intraoperative bleeding was 3(3.8%) in CPDT group and zero cases in SSPDT group, postoperative bleeding occurred in 1(1.3%) patient in

both group, 1(1.3%) patient had pneumothorax in CPDT group. Due to wider incision in SSPDT group careful hemostasis in field under vision and performing tracheostomy by directly visualizing the trachea, there were less complications in SSPDT group compared to CPDT. In our study complications especially post, operative bleeding was reported more in PDT group than in HT group and the results are comparable to this study.[30]

Hahemian et al did a prospective randomized double blinded trail in 2015 comparing mini surgical percutaneous dilatational tracheostomy(msPDT) with surgical tracheostomy (ST) and classical percutaneous dilatational tracheostomy (PDT). In this study the head nurse in ICU was responsible for allocation into groups and did not participate in the study.Data such as intraoperative and post-operative bleeding and vitals were collected by nurse assigned by nurse head, blinded to the procedure, The other data which was collected could not be blinded . This study reported that the mean procedural time in patient who underwent msPDT(2min SD=0.7) was lower than PDT (7.5 min, SD=3.3min) showing statistically significant difference in both groups with p value <0.001. This study demonstrated that none of the patients in group msPDT reported intraoperative hypoxemia and paratracheal insertion. In PDT group 6 patients (SD =3.8) had both hypoxemia and paratracheal insertion. There was statistically significance difference in, mild to moderate bleeding between both groups. Only 2 patients (SD=1.3) in msPDT group had severe bleeding in comparison to PDT group which demonstrated severe bleeding in 6 patients (SD=6.9) showing statistical difference between both groups with p value <0.0001. This study showed results comparable to our study which showed bleeding complications in PDT group than in HTgroup.[29]In our study bleeding was controlled by pressure given by gauze soaked in 2 % lidoocaine in adrenaline. No surgical intervention was required for hemostasis.

Molardi et al conducted study in 2016 on hybrid approach to tracheostomy between classical surgical and percutaneous tracheostomies. 67 patients underwent New Modified Surgical Tracheostomy (NMST) and 56 patients underwent Classical Surgical Tracheostomy. This study reported that procedure time for both NMST and CST was same for both groups. There was significantly lower number of early complications compared to CST group with p value of 0. 005.In hospital mortality was higher in CST group in comparison to NMST (18 deaths vs 4 in NMST group, p=0.001). Early tube obstruction was more in CST group (12 cases in CST vs 4 in NMST group) showing statistically significant difference with p value of 0. 014. There was no statistical difference in the number of cases of hemorrhage. This study concluded that less tissue dissection in NMST group decreases the bleeding risk and also tube obstruction.[19]

Kang et al did a study in 2021 on safety and feasibility of hybrid tracheostomy. This study reported mean procedure time of 13 min and no major bleeding or pneumothorax .21.8% cases demonstrated minor oozing from site. This study concluded that HT can be performed safely in short time of 13 mins and did not require extra equipment or manpower and also there was no major bleeding risk although one third of patients were on antiplatelet or anticoagulants therapy. This study reported less risk of hemorrhage similar to our study, thus concluding that hybrid tracheostomy can be safely performed in patients.

No study is without limitation or pitfalls. There are many biases like experience of operator. Some of the procedures were done by consultants and in others consultants assisted the junior faculty or residents in PDT group. All hybrid procedures were done by senior faculty members.

To conclude PDT and Hybrid tracheostomy are comparable with similar results. Hybrid tracheostomy has an edge being performed by two experiencedpersonnel from twospecialties(intensivistwith otolaryngologist)

and use of electrocautery for coagulation and hemostasis and facilitating the HT safe manner.

SUMMARY AND CONCLUSION

In intensive care units of Dayanand Medical College and Hospital 150 patients needing tracheostomy was enrolled in prospective randomized trial to compare hybrid tracheostomy with percutaneous dilatational tracheostomy

HT Group: Patients in this group underwent Hybrid Tracheostomy(n=75)

PDT Group: Patients in this group underwent Percutaneous Dilatational Tracheostomy(n=75)

Aims and objectives of the study was to compare hybrid tracheostomy with percutaneous dilatational tracheostomy in terms of duration of procedure and early complications(upto 7 days) and adverse events.

Data collection included baseline demographics, difficulty in identification of landmark, site of needle insertion, number of attempts of successful needle and tracheostomy tube insertion, assessment time, procedure time, vital parameters, procedural complications, events during transfer of patients and post procedural complications.

The following observations were made:

1. The most common indication of tracheostomy in our study was airway protectionprobably most of patients in our study were neurosurgical patients who were weaned off from ventilation but require airway protection.
2. Tracheostomy was performed early in our study (mean 6.03 days in group HT and 5.72 days in group PDT post intubation)
3. The preferredsite of location of needle puncture was between second and third tracheal ring in both groups with no statistical difference
4. Number of attempts of successful needle and tracheostomy tube insertion was assessed as success in first attempt or more than one attempt.There was no statistical significance between both groups with most of time insertion of needle and tracheostomy tube in first attempt which can be explained the experience and expertise of the doctor performing the procedure.

5. The mean duration of procedure (assessment time and procedure time)was longer in group HT than in group PDT but there was no statistical difference.
6. The most common encountered complication was post-procedure bleeding seen in 15 cases. Out of 15 cases, 5 (6.7%) were seen in group HT and 10(13.3%) cases seen in group PDT, but there was no statistical significance between both groups and most of the times it was minor ooze.
7. All cases of post procedure bleeding required intervention in form of pressure with gauze soaked with adrenaline and holding low molecular weight heparin if ongoing.
8. Other complications which was encountered was pneumothorax in one case in group PDT for which chest tube was inserted.

In our study Hybrid Tracheostomy was comparable to Percutaneous Dilatational Tracheostomyin terms of duration of procedure and early complications. The bias in our study was that some procedure was done by consultants and in other consultants assisted the junior residents, hybrid tracheostomy being performed by doctors form two specialties (intensivist and otolaryngologist) together.

Thus, we conclude that both techniques arecomparable in safety and feasibilityand these can be performed in ICU patients on bedside and prevents patients needing isolation from exposure to infection by transfer.

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Sr. No	MRD No.	Diagnosis	Type of tracheostomy	Indications of tracheostomy	Cervical Spine injury	if, yes level of injury	Days on mechanical ventilation prior to tracheostomy	Date of the procedure				
-	-	-	-	Type of respiratory failure	-	-	-	-	Age(yrs)	Height(m)	Sex	Weight(Kg)
1	1469100	left pca infarct	HT	RESPIRATORY DISTRESS	NO	-	2	03-09-2023	60	1.6	F	60
2	1542374	P/O/C/O Decompression craniectomy with Right MCA Infarct	PDT	AIRWAY PROTECTION	NO	-	4	30/06/23	60	1.65	F	75
3	1470569	P/O/C/O Right EVD Insertion with Aneurysm coiling i/v/o IVH,SAH and ACA Aneurysm	HT	SECURE AIRWAY	NO	-	8	03-06-2023	67	1.6	M	75
4	1541772	Herpes Ecehlatitis with seizure disorder with ACS	HT	PROLONGED VENTILATION	NO	-	9	07-06-2023	57	1.62	M	90
5	1450699	LeftMultifocal Infarct ,CAD,HTN,DM	PDT	WEANING	NO	-	19	24/03/2023	62	1.62	F	64
6	1605009	P/O/C/C EVD Insertion left Thalamic bleed , ICH, HTN	PDT	AIRWAY PROTECTION	NO	-	6	14/07/2023	64	1.52	-	64
7	1605021	RSA C2#,,B/L PCA Infarct,DAI	HT	AIRWAY PROTECTION	YES	C2#	5	08-12-2023	25	1.77	M	75
8	1593000	RSA C2# Cerebral contusion , left femur#	PDT	AIRWAY PROTECTION	YES	C2#	15	10-03-2023	30	1.7	M	70
9	1594938	RSA P/O/C/Odecompression craniectomy ,SDH,Left Femur#	PDT	AIRWAY PROTECTION	NO	-	4	25/08/2033	21	1.7	M	65
10	1595520	Left Cerbellar Infarct	PDT	AIRWAY PROTECTION	NO	-	3	26/08/2023	42	1.75	M	74
11	1580115	Domestic Fall .B/L frontal haemorrhagic contusion,SDH,HTN,DM,CABG	PDT	AIRWAY PROTECTION	NO	-	7	08-04-2023	70	1.82	M	80
12	1593537	P/O/C/O Endovascular coiling ruptured right MCA Aneurysm	PDT	AIRWAY PROTECTION	NO	-	5	26/06/2023	63	1.75	M	75
13	1579631	Meningiencephalitis B/L vaculitic Infarct	HT	AIRWAY PROTECTION	NO	-	9	05-04-2023	43	1.77	M	80
14	1431308	P/O/C/O DECOMPRESSION CRANIECTOMY	HT	AIRWAY PROTECTION	NO	-	5	17/12/22	50	1.7	M	80
15	458582	P/O/C/O Decompression craniectomy ICH,HTN,COPD	HT	AIRWAY PROTECTION	NO	-	20	30/1/23	54	1.5	F	82
16	1566983	Right Cerebellar Infarct	HT	AIRWAY PROTECTION	NO	-	12	17/8/23	65	1.75	M	75
17	1593537	P/O/C/O Endovascular coiling ruptured right MCA Aneurysm	PDT	AIRWAY PROTECTION	NO	-	5	26/07/2023	63	1.75	M	72
18	1566983	Right Cereberllar Infarct,DM,HTN	PDT	AIRWAY PROTECTION	NO	-	11	17/08/23	57	1.6	F	80
19	1449191	P/O/C/O Exploratory laparotomy,Inflammatory myositis,Quadriplegia	HT	AIRWAY PROTECTION	NO	-	9	31/01/23	29	1.47	F	48
20	1551350	Tubercular meningits ,Vascular Infacrt	HT	PROLONGED VENTILATION	NO	-	13	24/07/23	53	1.6	F	65
21	1576047	P/O/C/O Decompression craniectomy left Acute SDH , Fciomaxillary injury	PDT	AIRWAY PROTECTION	NO	-	4	26/08/23	30	1.75	M	95
22	1549230	P/O/C/O Decompression craniectomy i/v/o acute SDH	HT	PROLONGED VENTILATION	NO	-	1	07-10-2023	35	1.8	M	94
23	1604470	A/H/O RSA SAH,IVH and Faciomaxillary injury	PDT	AIRWAY PROTECTION	NO	-	2	04-11-2023	35	1.57	M	58
24	1587181	P/O/C/O Decompresion craniectomy i/v/o left EDH post RSA	HT	AIRWAY PROTECTION	NO	-	4	08-11-2023	27	1.7	M	80
25	1573755	P/O/C/Odecompression craniectomyi/v/oRightAcuteSDH	PDT	WEANINGANDAIRWAYPROTECTION	NO	-	4	22/08/2023	27	1.7	M	70
26	1355124	k/c/o Masthenia Gravis,old AWMI,HTN,LRTI	HT	PROLONGED VENTILATION	NO	-	30	30/6/23	65	1.75	M	75
27	1444595	P/O/C/O Decompression Craniectomyi/v/o right MCA infarct	PDT	WEANING	NO	-	6	16/01/23	58	1.75	M	80
28	1426147	A/H/ORSA SAH	HT	AIRWAY PROTECTION	NO	-	2	12-06-2022	55	1.54	F	55
29	1422721	P/O/C/Odecompresion craniectomy SAH,SDH POST RSA	PDT	AIRWAY PROTECTION	NO	-	13	12-12-2022	23	1.82	M	80
30	1425349	c/oacute ich	HT	AIRWAY PROTECTION	NO	-	4	12-07-2022	60	1.7	M	80
31	1425827	A/H/O RSA SAH,IVH	PDT	SECURE AIRWAY	NO	-	3	12-09-2022	16	1.77	M	74
32	1422903	A/H/O RSA SAH,SDH DAI	HT	AIRWAY PROTECTION	NO	-	3	12-02-2022	28	1.7	M	70
33	1428404	A/H/O RSA SAH Haemorrhagic contusion seizures episodes	PDT	AIRWAY PROTECTION	NO	-	7	15/12/2022	60	1.67	M	70
34	1442840	P/O/C/O Decompression craniectomy i/v/o basal ganglia bleed , HTN	HT	AIRWAY PROTECTION	NO	-	12	18/1/23	67	1.72	M	65
35	1424030	A/H/O RSA SAH , Faciomaxillary injury , femur#	HT	SECURE AIRWAY	NO	-	4	12-05-2022	24	1.62	M	65
36	1419887	A/H/O RSA SAH,DAI	PDT	SECURE AIRWAY	NO	-	6	05//12/2022	24	1.75	M	80
37	1483728	P/O/C/O Decompression craniectomy i/v/o right mca infacr	HT	WEANING AND AIRWAY PROTECTION	NO	-	3	23/03/23	38	1.7	M	70

Sr. No	MRD No.	Baseline characateristics				Sequential Organ failure Assesment (SOfA) score					INVESTIGATIONS	-	-	-	-	-	-
-	-	Neck circumference(cm)	Steromental distance(cm)	Thyromental distance(cm)	Neck Surface landmark palpable(cm)	PaO2 (mm Hg)	Glasgow coma score(/15)	Mean arterial pressure(mm Hg)	Platelet counts(10^3/ul)	Serum creatine(mg%)	PLATLET COUNT	PTI/INR	HAEMOGLOBIN	CREATNINE	UREA	SERUM SODIUM	SERUM POTASSIUM
1	1469100	32	12.6	6.6	YES	100	7	94	169	0.76	169	13.1/1.20	9.4	0.76	58	140	4.29
2	1542374	33	12	6.5	YES	161	6	100	211	0.55	211	10.4/0.95	10.1	0.55	17	139	3.64
3	1470569	34	12.6	6.6	YES	98	7	107	173	0.67	173	12.7/1.16	10.1	0.67	47	144	3.26
4	1541772	40	12.4	6.5	NO	97	5	90	188	3.23	188	12.0/1.10	14	3.23	103	141	3.83
5	1450699	32	12.5	6.7	YES	136	6	83	234	0.78	234	12.2/1.12	8.8	0.78	49	139	3.35
6	1605009	32	12.6	6.6	YES	142	7	103	243	0.79	243	16.0/1.46	11.4	0.79	31	142	3.7
7	1605021	32	12.6	6.7	YES	94	6	97	140	0.52	140	12.1/1/11	10.7	0.52	36	142	3.2
8	1593000	32	12.7	6.5	YES	201	2	100	295	1.81	295	17.2/1.57	9.9	1.81	207	147	5.13
9	1594938	32	12.6	6.6	YES	77	6	103	349	0.68	349	14.6/1.34	8.3	0.68	46	140	3.61
10	1595520	32	12.5	6.5	YES	240	5	106	128	0.89	128	14.1/1.29	14.8	0.89	61	141	3.81
11	1580115	32	12.8	6.7	YES	220	3	112	188	1	188	12.9/1.18	8	1	70	146	3.23
12	1593537	34	12.6	6.7	YES	75	6	107	82	0.67	82	11.3/1.04	9.7	0.67	39	142	3.83
13	1579631	34	12.7	6.7	YES	94	4	96	242	0.52	242	10.0/0.92	10.3	0.52	55	136	4.98
14	1431308	32	12.7	6.6	YES	138	6	74	154	1.02	154	11.6/1.06	10	1.02	19	135	3.01
15	458582	34	12.3	6.5	YES	103	8	105	160	0.24	160	11.0/1.03	9.5	0.24	32	143	3.19
16	1566983	33	12.6	6.7	YES	104	7	1.21	160	0.5	160	12.7/1.01	12.1	0.5	38	136	3.65
17	1593537	34	12.7	6.6	YES	75	6	105	82	0.67	82	11.3/1.04	9.7	0.67	39	142	3.83
18	1566983	33	12.7	6.7	YES	98	7	104	328	0.4	328	14.0/1.28	9.3	0.4	17	139	3.89
19	1449191	30	12.2	6.1	YES	124	10	90	324	0.13	324	15.7/1.44	9.1	0.13	23	140	4.01
20	1551350	32	12.6	6.6	YES	188	7	90	150	0.36	150	10.7/1.12	7.8	0.36	12	139	3.74
21	1576047	34	12.7	6.6	YES	100	3	66	202	0.75	202	13.1/1.02	10.2	0.75	18	138	4.34
22	1549230	34	12.8	6.7	YES	94	3	105	203	0.78	203	10.0/1.08	13	0.78	34	136	3.4
23	1604470	32	12.5	6.5	YES	194	6	91	237	0.88	237	10.2/0.94	13	0.88	21	139	3.32
24	1587181	34	12.6	6.7	YES	191	4	95	250	0.58	250	12.1/1,11	12	0.58	33	135	3.79
25	1573755	34	12.7	6.6	YES	109	5	74	152	0.95	152	11.2/1.03	10.1	0.95	57	146	3.88
26	1355124	34	12.6	6.7	YES	234	10	98	120	0.59	120	11.8/1.08	9.1	0.59	39	141	3.4
27	1444595	35	12.8	6.6	YES	130	5	110	213	0.66	213	11.0/1.01	13.2	0.66	34	143	3.13
28	1426147	32	12.4	6.3	YES	102	4	155	219	1.04	219	11.9/1.09	10.7	1.04	24	142	4.32
29	1422721	32	12.8	6.7	YES	202	8	102	289	0.65	289	14.0/`.27	8.8	0.65	47	147	4.29
30	1425349	35	12.5	6.4	YES	98	5	110	157	0.91	157	12.0/1.10	12.5	0.91	41	134	3.7
31	1425827	35	12.7	6.8	YES	137	6	146	286	0.54	286	14.0/1.28	9.7	0.54	21	145	4.13
32	1422903	34	12.7	6.5	YES	110	4	139	86	0.63	86	13.3/1.22	9.9	0.63	33	138	3.21
33	1428404	33	12.6	6.5	YES	154	4	96	225	0.82	225	11.9/1.09	9.4	0.82	40	146	3.88
34	1442840	35	12.7	6.8	YES	96	7	89	367	1.55	367	10.8/0.99	8.7	1.55	48	140	3.61
35	1424030	33	12.5	6.4	YES	110	6	147	140	1.8	140	9.6/0.88	7.6	1.8	75	148	3.19
36	1419887	33	12.7	6.7	YES	130	6	170	439	0.82	439	13.2/1.21	11.6	0.82	45	146	3.81
37	1483728	34	12.7	6.5	YES	98	3	88	160	0.98	160	12.1/1.05	12	0.98	22	136	9.6

Sr. No	MRD No.	-	MEDICATIONS GIVEN BEFORE PROCEDURE	-	-	PRE PROCEDURE VITALS	-	-	-	-	PRECEDURAL VITALS	-	AT 0 MIN	-	-	PROCEDURAL VITALS AT 5 MIN	-	-	-	-	POST PREOCEUDRAL VITALS	-	-	-	-
-	-	SERUM CHLORIDE	FENTANL	MIDAZOLAM	ATRACURIUM	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR
1	1469100	109	100	3	50	70	120	93	98	20	72	118	94	98	20	76	122	98	98	20	74	126	96	98	20
2	1542374	100	100	3	50	66	148	100	99	16	70	146	105	99	16	72	150	110	99	16	68	152	109	99	16
3	1470569	106	100	4	50	90	148	107	100	18	86	148	107	100	18	84	146	105	100	16	86	140	99	100	16
4	1541772	105	100	5	50	108	110	90	100	20	112	114	93	100	20	116	118	95	100	22	102	120	87	100	20
5	1450699	101	100	5	50	102	110	83	98	18	100	110	86	98	18	101	114	89	98	20	98	110	83	98	18
6	1605009	102	100	4	50	98	90	70	99	20	97	96	77	99	20	95	94	74	99	20	82	94	75	99	20
7	1605021	99	100	3	50	56	130	97	99	12	56	138	99	99	14	57	136	100	99	14	54	134	103	99	14
8	1593000	108	100	5	50	100	140	101	100	20	108	148	97	100	20	107	154	105	100	20	106	160	112	100	20
9	1594938	103	100	4	75	80	126	109	100	20	88	138	109	100	20	88	136	105	100	20	84	130	97	100	20
10	1595520	103	100	4	50	106	128	103	100	20	98	130	107	100	20	96	136	108	100	20	100	140	113	100	20
11	1580115	106	50	3	50	60	178	114	100	20	57	178	118	100	18	57	174	113	100	18	60	176	112	100	18
12	1593537	106	100	4	50	80	156	107	99	20	82	152	108	99	20	82	155	103	99	20	82	155	103	99	20
13	1579631	93	100	5	50	98	130	90	99	15	96	130	97	99	15	96	134	99	99	15	94	138	106	99	15
14	1431308	95	100	3	50	62	102	74	100	16	76	138	99	100	14	74	102	76	100	16	68	100	72	100	16
15	458582	96	100	5	50	78	140	106	100	16	76	146	110	100	14	78	144	108	100	16	74	142	114	100	16
16	1566983	98	50	4	50	82	120	93	98	20	84	124	94	98	20	82	126	96	98	20	86	126	96	98	20
17	1593537	106	100	4	50	82	154	106	99	20	88	158	104	99	20	84	152	100	99	20	86	148	103	99	20
18	1566983	98	50	4	50	80	180	100	100	12	84	180	104	100	14	84	174	105	100	14	82	158	99	100	18
19	1449191	100	100	1	50	70	128	90	96	18	74	124	94	97	18	74	124	94	97	18	76	130	96	97	18
20	1551350	107	50	5	50	140	130	90	100	16	142	128	88	100	16	138	126	86	100	16	130	130	92	100	16
21	1576047	108	100	4	50	134	88	66	100	16	123	102	74	100	14	127	108	80	100	16	134	110	77	100	16
22	1549230	94	100	5	50	94	138	106	100	14	92	140	105	100	14	94	144	103	100	14	96	140	93	100	14
23	1604470	103	50	5	25	96	118	90	98	20	94	122	91	98	20	92	120	92	98	20	80	120	88	98	20
24	1587181	100	100	3	50	104	120	93	99	22	100	124	99	99	22	98	126	98	99	22	96	126	95	99	22
25	1573755	101	100	3	50	78	108	71	100	20	76	107	74	100	20	77	110	76	100	20	80	106	74	100	20
26	1355124	92	100	5	50	64	130	97	98	16	66	136	99	98	16	70	134	99	98	18	68	140	100	98	16
27	1444595	101	100	5	50	96	142	108	100	18	100	144	109	100	18	94	142	107	100	18	100	143	108	100	18
28	1426147	103	30	5	50	96	138	103	100	14	97	134	102	100	16	98	136	104	100	16	98	136	106	100	16
29	1422721	111	100	5	50	86	150	104	99	20	84	156	106	99	16	90	154	104	99	18	90	146	102	99	20
30	1425349	95	200	3	50	90	150	110	98	20	84	148	109	98	20	89	146	108	98	20	90	150	110	98	20
31	1425827	105	50	5	50	100	130	146	100	18	100	136	94	100	18	104	138	96	100	18	116	142	99	100	24
32	1422903	103	50	5	50	90	120	93	99	16	94	124	98	99	18	96	126	96	99	18	92	130	94	99	18
33	1428404	109	50	10	50	68	130	96	100	18	68	134	94	100	16	69	136	98	100	18	74	120	86	100	16
34	1442840	101	100	5	50	60	124	89	100	14	52	128	90	99	14	56	124	92	99	14	60	126	91	99	14
35	1424030	112	100	4	50	124	128	99	99	30	124	128	88	99	28	120	130	90	99	30	112	112	94	99	28
36	1419887	109	100	5	50	114	152	110	100	22	118	148	112	100	20	116	150	114	100	20	118	150	116	100	20
37	1483728	98	50	5	50	78	120	80	100	16	70	128	82	100	16	82	130	84	100	16	86	132	86	100	14

Sr. No	MRD No.	PROCEDURAL RECORDINGS	-	-	-	-	-	PROCEDURAL COMPLICATIONS	-	-
-	-	IDENTIFICATION OF LANDMARK BY PALPATION	ASSESSMENT TIME	SITE OF NEEDLE INSERTION	NUMBER OF ATTEMPTS FOR SUCCESSFUL NEEDLE INSERTION	NUMBER OF ATTEMTS FOR SUCCESSFUL TRACHEOSTOMY TUBE	PROCEDURE TIME	MINOR BLEEDING	BLEEDING REQUIRING INTERVENTION	SURGICAL EMPHYSEMA
1	1469100	yes	1 min	T2 to T3	1	1	3.40MIN	NO	NO	NO
2	1542374	yes	1 min	T2 to T3	1	1	2.10min	NO	NO	NO
3	1470569	YES	1 min	T2 to T3	1	1	3.20 min	NO	NO	NO
4	1541772	NO	1 min	T2 to T3	1	1	2.30 min	NO	NO	NO
5	1450699	YES	1min	T2 to T3	1	1	2.20min	NO	NO	NO
6	1605009	YES	1 min	T2 to T3	1	1	2.15 MIN	NO	NO	NO
7	1605021	YES	1 min	T2 to T3	1	1	2.40MIN	NO	NO	NO
8	1593000	YES	1min	T2 to T3	1	1	2.40MIN	NO	NO	NO
9	1594938	Yes	1 min	T2 to T3	1	1	2.30MIN	NO	NO	NO
10	1595520	YES	1 min	T2 to T3	1	1	2.40MIN	NO	NO	NO
11	1580115	Yes	1 MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
12	1593537	yes	1 min	T2 to T3	1	1	2.20 MIN	NO	NO	NO
13	1579631	yes	1MIN	T2 to T3	1	1	3.20MIN	NO	NO	NO
14	1431308	YES	1MIN	T2 to T3	1	1	3.0MIN	NO	NO	NO
15	458582	YES	1MIN	T2 to T3	1	1	3.40 MIN	NO	NO	NO
16	1566983	YES	1MIN	T2 to T3	1	1	3.20MIN	NO	NO	NO
17	1593537	YES	1MIN	T2 to T3	1	1	2.20MIN	NO	NO	NO
18	1566983	yes	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
19	1449191	YES	1MIN	T2 to T3	1	1	3.0MIN	NO	NO	NO
20	1551350	YES	1MIN	T2 to T3	1	1	3.20MIN	NO	NO	NO
21	1576047	YES	1MIN	T2 to T3	1	1	2.20MIN	NO	NO	NO
22	1549230	YES	1MIN	T2 to T3	1	1	3.3MIN	NO	NO	NO
23	1604470	yes	1min	T2 to T3	1	1	2.2MIN	NO	NO	NO
24	1587181	YES	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
25	1573755	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
26	1355124	YES	1MIN	T2 to T3	1	1	2.8MIN	NO	NO	NO
27	1444595	YES	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
28	1426147	yes	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
29	1422721	yes	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
30	1425349	YES	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
31	1425827	yes	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
32	1422903	YES	1MIN	T2 to T3	1	1	3.0MIN	NO	NO	NO
33	1428404	YES	1MIN	T2 to T3	1	1	2MIN	NO	NO	NO
34	1442840	YES	1MIN	T2 to T3	1	1	2MIN	NO	NO	NO
35	1424030	YES	1MIN	T2 to T3	1	1	3.2 MIN	NO	NO	NO
36	1419887	YES	1MIN	T2 to T3	1	1	2MIN	NO	NO	NO
37	1483728	YES	1MIN	T2 to T3	1	1	2.8MIN	NO	NO	NO

Sr. No	MRD No.	-	-	-	-	-	-	-	-	EVENTS DURING TRANSFER TO AND FROM ICU TO OT	-
-	-	PNEUMOTHORAX	TRACHEAL INJURY	ESOPHAGEAL INJURY	PARATRACHEAL PLACEMENT/FALSE TRACT PLACEMENT	HEMODYNAMIC INSTABILITY	DESATURATION	RUPTUREED ETT CUFF	ANY OTHER	ACCIDENTAL DECANNULATION	DESATUTRATION
1	1469100	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
2	1542374	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
3	1470569	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
4	1541772	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
5	1450699	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
6	1605009	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
7	1605021	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
8	1593000	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
9	1594938	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
10	1595520	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
11	1580115	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
12	1593537	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
13	1579631	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
14	1431308	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
15	458582	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
16	1566983	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
17	1593537	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
18	1566983	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
19	1449191	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
20	1551350	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
21	1576047	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
22	1549230	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
23	1604470	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
24	1587181	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
25	1573755	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
26	1355124	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
27	1444595	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
28	1426147	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
29	1422721	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
30	1425349	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
31	1425827	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
32	1422903	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
33	1428404	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
34	1442840	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
35	1424030	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
36	1419887	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
37	1483728	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA

Sr. No	MRD No.	-	-	-	-	POST PROCEDURE COMPLICATIONS	-	-	-	-
-	-	BLEEDING	HEMODYNAMIC INSTABLITY	ARRHYTHMIA	ANY OTHER	BLEEDING	SOFT TISSUE INJURY	ACCIDENTAL DECCANULATION/TUBE DISPLACEMENT	ANY FINDING ON CHEST X RAYDONE AFTER 2 HRS	ANY OTHER
1	1469100	NA	NA	NA	NA	NO	NO	NO	NO	NO
2	1542374	NA	NA	NA	NA	NO	NO	NO	NO	NO
3	1470569	NA	NA	NA	NA	NO	NO	NO	NO	NO
4	1541772	NA	NA	NA	NA	NO	NO	NO	NO	NO
5	1450699	NA	NA	NA	NA	NO	NO	NO	NO	NO
6	1605009	NA	NA	NA	NA	NO	NO	NO	NO	NO
7	1605021	NA	NA	NA	NA	NO	NO	NO	NO	NO
8	1593000	NA	NA	NA	NA	YESDAY3,ADRSOAKEDGAUZEPIECE	NO	NO	NO	NO
9	1594938	NA	NA	NA	NA	NO	NO	NO	NO	NO
10	1595520	NA	NA	NA	NA	NO	NO	NO	NO	NO
11	1580115	NA	NA	NA	NA	NO	NO	NO	NO	NO
12	1593537	NA	NA	NA	NA	NO	NO	NO	NO	NO
13	1579631	NA	NA	NA	NA	NO	NO	NO	NO	NO
14	1431308	NA	NA	NA	NA	NO	NO	NO	NO	NO
15	458582	NA	NA	NA	NA	NO	NO	NO	NO	NO
16	1566983	NA	NA	NA	NA	NO	NO	NO	NO	NO
17	1593537	NA	NA	NA	NA	NO	NO	NO	NO	NO
18	1566983	NA	NA	NA	NA	NO	NO	NO	NO	NO
19	1449191	NA	NA	NA	NA	NO	NO	NO	NO	NO
20	1551350	NA	NA	NA	NA	NO	NO	NO	NO	NO
21	1576047	NA	NA	NA	NA	NO	NO	NO	NO	NO
22	1549230	NA	NA	NA	NA	NO	NO	NO	NO	NO
23	1604470	NA	NA	NA	NA	NO	NO	NO	NO	NO
24	1587181	NA	NA	NA	NA	NO	NO	NO	NO	NO
25	1573755	NA	NA	NA	NA	NO	NO	NO	NO	NO
26	1355124	NA	NA	NA	NA	DAY 6, ADR SAOAKED GAUZE PIECE	NO	NO	NO	NO
27	1444595	NA	NA	NA	NA	NO	NO	NO	NO	NO
28	1426147	NA	NA	NA	NA	DAY3, ADRSAOKEDGAUZE PEICEKPET ANDHOLDEDCLEXANE	NO	NO	NO	NO
29	1422721	NA	NA	NA	NA	NO	NO	NO	NO	NO
30	1425349	NA	NA	NA	NA	NO	NO	NO	NO	NO
31	1425827	NA	NA	NA	NA	NO	NO	NO	NO	NO
32	1422903	NA	NA	NA	NA	NO	NO	NO	NO	NO
33	1428404	NA	NA	NA	NA	NO	NO	NO	NO	NO
34	1442840	NA	NA	NA	NA	NO	NO	NO	NO	NO
35	1424030	NA	NA	NA	NA	TOOK DAMA DAY 3				
36	1419887	NA	NA	NA	NA	NO	NO	NO	NO	NO
37	1483728	NA	NA	NA	NA	NO	NO	NO	NO	NO

Sr. No	MRD No.	Diagnosis	Type of tracheostomy	Indications of tracheostomy	Cervical Spine injury	if, yes level of injury	Days on mechanical ventilation prior to tracheostomy	Date of the procedure				
-	-	-	-	Type of respiratory failure	-	-	-	-	Age(yrs)	Height(m)	Sex	Weight(Kg)
38	1527807	P/O/C/O Decomression craniectomy i/v/o SDH SAH	HT	SECURE AIRWAY	NO	-	6	28/06/23	45	1.75	M	85
39	1445183	Encephalopathy , cld, sezure disorder	PDT	AIRWAY PROTECTION	NO	-	7	17/01/23	73	1.7	M	70
40	1450577	A/H/O RSA Cervical spine injury/quadrplegia/AK1	HT	AIRWAY PROTECTION	YES	C5	9	30/1/23	50	1.7	M	70
41	1487760	Myasthenia Gravis,DM,	PDT	SECURE AIRWAY	NO	-	4	30/03/2023	56	1.65	M	75
42	1532336	Left FTP Decompresion craniectomy post SDH	PDT	SECURE AIRWAY	NO	-	4	06-12-2023	23	1.72	M	68
43	1525152	P/O/C/O Electic shock with CSI,Anterior cervical laminectomy, left forearm amputation	HT	AIRWAY PROTECTION	YES	D1#	7	06-12-2023	60	1.52	M	75
44	1432340	P/O/C/O Total maxillectomy with DM,HTN, Solitary left kidney	HT	AIRWAY PROTECTION	NO	-	10	16/01/23	80	1.72	M	80
45	1543602	C/O Domestic fall with SAH,IVH,Left frontal contusion,AKI,HTN	PDT	PROLONGED VENTILATION	NO	-	4	07-05-2023	55	1.77	M	75
46	1445252	C/O LGBS,AMAN	PDT	PROLONGED VENTILATION	NO	-	5	17/1/23	34	1.7	M	78
47	1286627	Post covid vaccination MND	PDT	AIRWAY PROTECTION	NO	-	1	12-07-2022	46	1.52	F	50
48	1480268	c/o LGBS AMAN, HYPOTHYROIDISM,DM,HTN	HT	AIRWAY PROTECTION	NO	-	6	20/03/23	64	1.72	M	80
49	513402	Left ACA Infarct ,HTN,AF,,AKI,CAD	PDT	AIRWAY PROTECTION	NO	-	10	03-01-2023	81	1.72	M	75
50	1445852	Left ICA Thrombosis,skull base osteomyleitis, DM,HTN	HT	FAILURE TO WEAN	NO	-	2	17/1/23	65	1.73	M	80
51	1649020	p/o/c/o Left FTP Decompression cranitotomy i/v/o left gangliocapsular bleed	HT	WEANING	NO	-	4	01-09-2023	80	1.54	F	80
52	1002286	MYASTHENIA GRAVIS, MYASTHENIC CRISIS	PDT	WEANING	NO	-	10	27/01/2023	53	1.54	F	50
53	1240568	ADVANCED PARKINSION DISEASE,LRRTI,DM	HT	AIRWAY PROTECTION	NO	-	6	30/01/2023	75	1.72	M	75
54	1658324	A/H/O RSA P/O/C/O ORIF MANDIBLE,HTN,SAH,IVH	HT	AIRWAY PROTECTION	NO	-	3	30/01/2023	75	1.67	M	60
55	1711746	A/H/O RSA SDH,SAH,IVH,DM	HT	AIRWAY PROTECTION	NO	-	8	17/04/2013	45	1.75	M	80
56	1710181	K/C/O Parkinson disease, seizure disorder,DM,HTN	PDT	AIRWAY PROTECTION	NO	-	5	20/04/2023	72	1.77	M	80
57	1696464	P/o/c/o Decompresion craniectomy i/v/o ICH post RSA	PDT	AIRWAY PROTECTION	NO	-	5	23/03/2023	55	1.77	M	78
58	1389825	c/o Tubercular meningitis, hydocephalus	PDT	PROLONGED VENTILATION	NO	-	4	04-04-2023	25	1.65	M	65
59	1635864	P/C/O Decpmression cranitomy i/v/o SDH Post SDH	HT	SECURE AIRWAY	NO	-	6	14/02/2023	22	1.67	M	90
60	8526000	P/O/C/O EVD , Suboccipital craniotomy i/v/o ICH, DM,HTN	PDT	SECURE AIRWAY	NO	-	4	19/05/2023	66	1.82	M	65
61	1648804	P/O/C/O Decompression cranitomy i/v/o EDH Post domestic fall	HT	SECURE AIRWAY	NO	-	14	02-10-2023	48	1.72	M	80
62	1643912	C/o left gagliocapsular bleed ,HTN	PDT	AIRWAY PROTECTION	NO	-	12	19/02/2023	47	1.67	M	70
63	1673276	A/H/O RSA ,Splenic grade3 injury,IVH,DAI	HT	AIRWAY PROTECTION	NO	-	3	19/02/2023	30	1.7	M	60
64	1635864	C/O Decompression cranitomy with evacution of SDH	PDT	SECURE AIRWAY	NO	-	6	14/12/2022	22	1.67	M	90
65	1695308	A/H/O RSA P/O/C/O Deompression craniectomy i/v/o SDH	HT	AIRWAY PROTECTION	NO	-	5	22/03/2023	39	1.62	F	58
66	1621281	RSA ,DAI,EDH,Exfix left distal femur	PDT	AIRWAY PROTECTION	NO	-	4	13/11/21	20	1.75	M	75
67	1399095	p/o/c/o decompression craniotomy i/v/o SDH,SAH, B/L Rib#	HT	AIRWAY PROTECTION	NO	-	6	25/10/22	40	1.7	M	68
68	1521223	P/O/c/c/o EVD insertion i/v/o Left basal ganglia bleed , IVH,DM,HTN	PDT	AIRWAY PROTECTION	NO	-	4	25/04/2023	56	1.6	M	56
69	1372799	P/O/C/O Decompression craniotomy LefT MCA Infarct, CAD,DM,HTN,AKI	HT	AIRWAY PROTECTION	NO	-	7	18/03/23	57	1.65	M	85
70	1673276	A/H/O RSA Left frontal haemorrhagic contusion,IVH	HT	AIRWAY PROTECTION	NO	-	6	22/04/2023	30	1.67	M	60
71	1711406	P/O/C/O EVD Insertion i/v/o Right thalamic bleed, IVH, HTN,DM	HT	PROLONGED VENTILATION	NO	-	3	04-12-2023	55	1.7	M	65
72	1629363	A/H/O Domestic fall, SDH,Diabetic Nehphropathy,HTN,Seizure disorder	PDT	WEANING AND AIRWAY PROTECTION	NO	-	2	12-12-2023	69	1.7	M	58
73	1715586	A/H/O RSA,SDH,Multiple Rib#,right #clavicle	PDT	WEANING AND AIRWAY PROTECTION	NO	-	6	20/04/2023	49	1.8	M	85
74	1652937	A/H/O RSA ,DAI,AKI	HT	PROLONGED VENTILATION	NO	-	5	18/01/2023	22	1.67	M	80
75	1706671	P/O/C/O Deompression craniectomy i/v/o SDH Post RSA	HT	FAILURE TO WEAN	NO	-	6	04-08-2023	32	1.63	F	56
76	1702441	P/O/C/O EVD Insetion i/v/o SAH,HTN,DM	PDT	PROLONGED VENTILATION	NO	-	6	04-03-2023	71	1.7	M	62

Sr. No	MRD No.	Baseline characateristics				Sequential Organ failure Assesment (SOfA) score					INVESTIGATIONS	-	-	-	-	-	-
-	-	Neck circumference(cm)	Steromental distance(cm)	Thyromental distance(cm)	Neck Surface landmark palpable(cm)	PaO2 (mm Hg)	Glasgow coma score(/15)	Mean arterial pressure(mm Hg)	Platelet counts(10^3/ul)	Serum creatine(mg%)	PLATLET COUNT	PTI/INR	HAEMOGLOBIN	CREATNINE	UREA	SERUM SODIUM	SERUM POTASSIUM
38	1527807	36	12.7	6.6	YES	235	6	98	150	0.98	150	11.0/1.01	14.9	0.98	31	141	3.11
39	1445183	33	12.6	6.5	YES	132	9	94	92	1.01	92	13.0/1.19	12	1.01	68	147	4.09
40	1450577	34	12.6	6.7	YES	127	9	94	160	0.72	160	12.4/1.14	11.2	0.72	73	139	4.52
41	1487760	35	12.6	6.5	YES	171	9	90	170	0.54	170	12.7/1.16	12.9	0.54	41	148	34
42	1532336	35	12.5	6.5	YES	314	6	94	204	1.03	204	12.3/1.13	10.2	1.03	25	143	3.23
43	1525152	34	12.4	6.5	YES	90	10	84	172	0.42	172	15.6/1.43	8.9	0.42	37	136	4.26
44	1432340	34	12.7	6.7	YES	138	10	84	299	2.64	299	11.9/1.09	8.9	2.64	76	130	4.63
45	1543602	35	12.6	6.7	YES	213	4	92	227	3.73	227	12.7/1.16	12	3.73	79	135	3.77
46	1445252	35	12.8	6.6	YES	90	10	87	160	0.7	160	13.8/1.26	12.1	0.7	34	127	4.68
47	1286627	32	12.5	6.5	YES	110	10	92	311	0.25	311	11.3/1.04	13.1	0.25	12	131	2.59
48	1480268	36	12.7	6.7	YES	119	10	96	212	0.97	212	11.5/1.05	12.9	0.97	61	131	4.08
49	513402	34	12.7	6.7	YES	110	10	96	306	2.29	306	13.8/1.26	11.7	2.29	127	142	4.83
50	1445852	35	12.8	6.7	YES	98	8	84	216	0.73	216	18.9/1.72	9.9	0.73	17	138	4.92
51	1649020	36	12.4	6.5	YES	432	4	104	201	0.53	201	12.1/1.11	9.9	0.53	10	139	3.84
52	1002286	32	12.7	6.7	YES	54	10	96	254	0.71	254	10.5/0.96	11.2	0.71	13	138	3.64
53	1240568	35	12.7	6.6	YES	78	10	96	303	0.52	303	12.9/1.18	11.2	0.52	25	132	4.47
54	1658324	32	12.4	6.4	YES	68	3	113	165	0.91	165	11.6/1.06	9.1	0.91	63	148	4
55	1711746	36	12.6	6.6	YES	74	8	92	649	0.56	649	13.8/1.26	11.2	0.56	38	134	4.68
56	1710181	37	12.7	6.7	YES	211	6	74	233	1.58	233	13.7/1.25	9.9	1.58	77	129	4.04
57	1696464	37	12.6	6.5	YES	90	3	90	114	0.95	114	11.8/1.08	9	0.95	41	144	3.42
58	1389825	34	12.6	6.5	YESS	78	4	95	219	0.4	219	15.5/1.42	14.6	0.4	20	139	4.43
59	1635864	37	12.6	6.5	YES	110	2	110	216	0.87	216	12.7/1.16	12.2	0.87	43	140	4.34
60	8526000	36	12.7	6.7	YES	110	7	95	160	0.7	160	11.2/1.0	12	0.7	28	140	4
61	1648804	37	12.7	6.6	YES	115	7	95	130	0.62	130	14.3/1.31	10.9	0.62	24	143	3.64
62	1643912	34	12.6	6.5	YES	183	8	94	331	1.16	331	16.4/1.50	10.4	1.16	62	135	3.86
63	1673276	35	12.6	6.5	YES	187	3	102	100	1.58	100	13.7/1.25	10.2	1.58	74	154	3.78
64	1635864	37	12.6	6.5	YES	252	2	102	216	0.87	216	12.7/1.16	12.2	0.87	43	140	4.34
65	1695308	36	12.5	6.5	YES	300	5	85	213	0.95	213	11.4/1.05	10.2	0.95	39	149	3.82
66	1621281	36	12.7	6.7	YES	220	4	100	130	1.27	130	14.0/1.28	9.8	1.27	71	144	4.41
67	1399095	34	12.7	6.5	YES	78	6	74	275	0.75	275	11.9/1.09	8.4	0.75	54	139	4.02
68	1521223	35	12.6	6.5	YES	310	4	92	100	5.14	100	12.9/1.18	8.9	5.14	226	151	4.46
69	1372799	35	12.6	6.5	YES	178	3	94	254	0.8	254	10.0/0.92	12.8	0.8	35	145	3.8
70	1673276	34	12.7	6.5	YES	98	3	95	283	0.58	283	12.O/1.4	12	0.58	18	136	4.29
71	1711406	35	12.7	6.7	YES	178	3	94	254	0.8	254	10.0/0.92	12.8	0.8	35	145	3.8
72	1629363	35	12.7	6.7	YES	99	6	75	275	2.02	275	11.0/1.4	9	2.02	74	135	3.8
73	1715586	35	12.7	6.6	YES	141	2	114	120	0.53	120	12.6/1.15	11	0.53	19	141	3.53
74	1652937	37	12.5	6.5	YES	87	4	90	150	0.66	150	11.5/1.05	8	0.66	47	145	4.24
75	1706671	34	12.5	6.5	YES	249	8	84	203	0.34	203	11.4/1.05	10	0.34	20	141	3.42
76	1702441	36	12.6	6.7	YES	90	5	97	190	1.1	190	10.8/0.89	12.2	1.1	62	146	3.38

Sr. No	MRD No.	-	MEDICATIONS GIVEN BEFORE PROCEDURE	-	-	PRE PROCEDURE VITALS	-	-	-	-	PRECEDURAL VITALS	-	AT 0 MIN	-	-	PROCEDURAL VITALS AT 5 MIN	-	-	-	-	POST PREOCEUDRAL VITALS	-	-	-	-
-	-	SERUM CHLORIDE	FENTANL	MIDAZOLAM	ATRACURIUM	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR
38	1527807	110	100	5	50	84	130	97	100	16	86	136	96	100	14	82	130	94	100	16	78	134	90	100	16
39	1445183	110	100	4	50	86	110	98	98	14	82	114	94	98	16	84	100	92	97	18	84	108	96	98	18
40	1450577	99	50	2	50	68	126	90	98	16	64	128	92	96	16	66	124	90	98	16	68	126	94	98	16
41	1487760	103	50	2	25	106	140	90	90	12	104	138	92	99	14	108	136	94	99	14	104	130	98	99	14
42	1532336	98	100	5	50	104	120	93	98	20	102	126	96	98	20	108	128	102	98	20	98	126	101	98	20
43	1525152	105	100	3	50	68	124	87	100	16	68	120	86	100	18	70	126	84	100	18	62	120	93	100	18
44	1432340	99	100	1	30	80	110	83	100	12	80	123	70	98	12	81	94	74	91	12	78	120	76	96	12
45	1543602	98	150	3	50	78	140	90	100	22	72	142	92	100	22	77	138	94	100	22	78	146	96	100	22
46	1445252	90	100	5	50	84	138	88	100	20	86	136	85	100	20	88	134	86	100	20	86	136	84	100	20
47	1286627	97	150	3	50	78	124	95	100	18	74	126	96	100	16	76	128	94	100	18	78	128	94	100	16
48	1480268	98	100	6	50	74	140	107	98	16	84	136	104	98	16	82	134	98	98	16	86	130	97	98	16
49	513402	109	100	2	50	106	120	94	98	20	102	120	96	98	20	104	124	98	98	20	96	130	100	98	20
50	1445852	102	100	5	50	92	110	84	100	16	80	116	86	100	16	88	118	88	100	16	94	120	88	100	16
51	1649020	100	100	5	50	100	158	113	99	18	98	150	109	99	18	97	140	107	99	18	96	140	101	99	16
52	1002286	101	100	4	50	94	130	97	100	20	92	134	95	100	20	90	136	96	100	20	90	128	96	100	20
53	1240568	91	100	2	50	84	134	96	98	24	86	134	96	98	22	88	138	94	98	22	86	136	90	98	22
54	1658324	11	100	5	40	73	160	113	99	14	84	148	109	99	14	86	150	108	99	14	88	140	105	99	14
55	1711746	98	100	2	50	98	140	99	98	30	94	136	92	98	30	96	130	96	98	30	98	138	94	98	30
56	1710181	89	100	2	50	78	108	72	98	12	80	110	90	98	12	82	106	83	98	12	82	104	81	98	12
57	1696464	100	50	3	50	110	110	83	98	20	110	110	90	97	20	102	100	80	97	20	100	110	83	97	20
58	1389825	96	100	2	50	118	130	94	100	18	112	138	99	100	20	114	136	97	100	20	110	138	102	100	18
59	1635864	97	50	3	50	120	146	113	100	22	126	150	117	100	26	118	140	111	100	24	80	130	103	100	18
60	8526000	106	100	5	50	110	130	97	100	20	108	128	94	100	20	106	124	96	100	20	100	126	92	100	20
61	1648804	108	100	5	50	106	120	96	100	24	110	120	87	100	26	114	124	112	100	26	120	137	114	100	24
62	1643912	100	50	5	50	90	110	79	100	18	84	112	91	100	20	80	114	95	100	20	76	120	97	100	20
63	1673276	120	50	5	50	114	120	104	100	20	116	124	99	100	20	110	128	103	100	20	112	140	105	100	20
64	1635864	97	100	3	50	120	146	103	100	22	126	150	107	100	24	118	148	104	100	20	110	130	98	100	18
65	1695308	114	100	4	50	90	104	75	98	20	92	100	75	98	22	104	114	85	98	24	106	114	85	99	24
66	1621281	108	50	3	50	108	138	102	100	16	120	136	101	100	16	110	134	98	100	16	80	130	97	100	16
67	1399095	102	100	5	50	98	136	97	98	20	112	138	97	98	22	108	140	100	98	20	100	136	97	98	20
68	1521223	113	50	5	50	114	132	91	100	24	108	138	98	100	24	106	140	100	100	24	116	144	106	100	26
69	1372799	110	100	5	50	100	148	92	100	14	102	143	95	100	14	100	146	95	100	14	98	150	97	98	16
70	1673276	100	100	5	50	94	140	100	100	22	96	138	97	100	22	92	142	97	100	22	98	146	102	100	22
71	1711406	110	100	5	50	100	148	92	100	14	102	142	95	100	14	100	146	95	100	14	98	150	97	98	16
72	1629363	101	100	2	50	83	102	73	100	18	82	116	81	100	20	80	118	86	100	20	76	118	89	100	20
73	1715586	100	100	5	50	86	148	112	100	20	86	150	113	100	20	88	152	116	100	20	82	156	116	100	20
74	1652937	100	100	5	50	102	154	92	98	16	106	150	90	98	16	100	148	103	98	16	110	154	110	98	16
75	1706671	102	100	3	30	116	110	83	100	14	104	102	83	100	14	106	110	89	100	14	110	112	91	100	14
76	1702441	98	100	5	50	84	152	97	100	20	86	150	98	100	20	82	148	96	100	20	88	148	100	100	20

Sr. No	MRD No.	PROCEDURAL RECORDINGS	-	-	-	-	-	PROCEDURAL COMPLICATIONS	-	-
-	-	IDENTIFICATION OF LANDMARK BY PALPATION	ASSESSMENT TIME	SITE OF NEEDLE INSERTION	NUMBER OF ATTEMPTS FOR SUCCESSFUL NEEDLE INSERTION	NUMBER OF ATTEMTS FOR SUCCESSFUL TRACHEOSTOMY TUBE	PROCEDURE TIME	MINOR BLEEDING	BLEEDING REQUIRING INTERVENTION	SURGICAL EMPHYSEMA
38	1527807	YES	1MIN	T2 to T3	1	1	3.2MIN	NO	NO	NO
39	1445183	YES	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
40	1450577	YES	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
41	1487760	YES	1MIN	T2 to T3	1	1	2.8MIN	NO	NO	NO
42	1532336	yes	1MIN	T2 to T3	1	1	2.5MIN	NO	NO	NO
43	1525152	YES	1MIN	T2 to T3	1	1	2.5MIN	NO	NO	NO
44	1432340	YES	1MIN	T2 to T3	1	1	3.30MIN	NO	NO	NO
45	1543602	YES	1MIN	T2 to T3	1	1	2.8MIN	NO	NO	NO
46	1445252	YES	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
47	1286627	YES	1MIN	T2 to T3	1	1	3.5MIN	NO	NO	NO
48	1480268	YES	1MIN	T2 to T3	1	1	2.4MIN	NO	NO	NO
49	513402	YES	1MIN	T2 to T3	1	1	3.2MIN	NO	NO	NO
50	1445852	YES	1MIN	T2 to T3	1	1	3MIN	NO	NO	NO
51	1649020	yes	1MIN	T2 to T3	1	1	3.50MIN	NO	NO	NO
52	1002286	YES	1MIN	T2 to T3	1	1	2.20MIN	NO	NO	NO
53	1240568	YES	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
54	1658324	NO	2MIN	T2 to T3	1	1	1OMIN	NO	NO	NO
55	1711746	YES	1MIN	T2 to T3	1	1	3.50MIN	NO	NO	NO
56	1710181	YES	1MIN	T2 to T3	1	1	2.50MIN	NO	NO	NO
57	1696464	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
58	1389825	YES	1MIN	T2 to T3	1	1	2.20MIN	NO	NO	NO
59	1635864	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
60	8526000	yes	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
61	1648804	YES	1MIN	T2 to T3	1	1	2.50MIN	NO	NO	NO
62	1643912	YES	1MIN	T2 to T3	1	1	2.50MIN	NO	NO	NO
63	1673276	YES	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
64	1635864	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
65	1695308	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
66	1621281	YES	1MIN	T2 to T3	1	1	2.20MIN	NO	NO	NO
67	1399095	YES	1MIN	T2 TO T3	1	1	2.30MIN	NO	NO	NO
68	1521223	YES	1MIN	T2 TO T3	1	1	2.20MIN	NO	NO	NO
69	1372799	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
70	1673276	YES	1MIN	T2 TO T3	1	1	2.30MIN	NO	NO	NO
71	1711406	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
72	1629363	YES	1MIN	T2 TO T3	1	1	2.30MIN	NO	NO	NO
73	1715586	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
74	1652937	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
75	1706671	YES	1MIN	T2 TO T3	1	1	2.60MIN	NO	NO	NO
76	1702441	YES	1MIN	T2 TO T3	1	1	2.60MIN	NO	NO	NO

Sr. No	MRD No.	-	-	-	-	-	-	-	-	EVENTS DURING TRANSFER TO AND FROM ICU TO OT	-
-	-	PNEUMOTHORAX	TRACHEAL INJURY	ESOPHAGEAL INJURY	PARATRACHEAL PLACEMENT/FALSE TRACT PLACEMENT	HEMODYNAMIC INSTABILITY	DESATURATION	RUPTUREED ETT CUFF	ANY OTHER	ACCIDENTAL DECANNULATION	DESATUTRATION
38	1527807	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
39	1445183	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
40	1450577	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
41	1487760	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
42	1532336	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
43	1525152	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
44	1432340	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
45	1543602	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
46	1445252	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
47	1286627	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
48	1480268	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
49	513402	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
50	1445852	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
51	1649020	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
52	1002286	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
53	1240568	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
54	1658324	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
55	1711746	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
56	1710181	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
57	1696464	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
58	1389825	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
59	1635864	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
60	8526000	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
61	1648804	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
62	1643912	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
63	1673276	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
64	1635864	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
65	1695308	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
66	1621281	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
67	1399095	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
68	1521223	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
69	1372799	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
70	1673276	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
71	1711406	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
72	1629363	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
73	1715586	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
74	1652937	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
75	1706671	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
76	1702441	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA

Sr. No	MRD No.	-	-	-	-	POST PROCEDURE COMPLICATIONS	-	-	-	-
-	-	BLEEDING	HEMODYNAMIC INSTABLITY	ARRHYTHMIA	ANY OTHER	BLEEDING	SOFT TISSUE INJURY	ACCIDENTAL DECCANULATION/TUBE DISPLACEMENT	ANY FINDING ON CHEST X RAYDONE AFTER 2 HRS	ANY OTHER
38	1527807	NA	NA	NA	NA	NO	NO	NO	NO	NO
39	1445183	NA	NA	NA	NA	NO	NO	NO	NO	NO
40	1450577	NA	NA	NA	NA	NO	NO	NO	NO	NO
41	1487760	NA	NA	NA	NA	NO	NO	NO	NO	NO
42	1532336	NA	NA	NA	NA	NO	NO	NO	NO	NO
43	1525152	NA	NA	NA	NA	NO	NO	NO	NO	NO
44	1432340	NA	NA	NA	NA	NO	NO	NO	NO	NO
45	1543602	NA	NA	NA	NA	NO	NO	NO	NO	NO
46	1445252	NA	NA	NA	NA	NO	NO	NO	NO	NO
47	1286627	NA	NA	NA	NA	NO	NO	NO	NO	NO
48	1480268	NA	NA	NA	NA	NO	NO	NO	NO	NO
49	513402	NA	NA	NA	NA	NO	NO	NO	NO	NO
50	1445852	NA	NA	NA	NA	NO	NO	NO	NO	NO
51	1649020	NA	NA	NA	NA	NO	NO	NO	NO	NO
52	1002286	NA	NA	NA	NA	NO	NO	NO	RIGHT PNEMOTHORAX	NO
53	1240568	NA	NA	NA	NA	NO	NO	NO	NO	NO
54	1658324	NA	NA	NA	NA	NO	NO	NO	NO	NO
55	1711746	NA	NA	NA	NA	NO	NO	NO	NO	NO
56	1710181	NA	NA	NA	NA	BEEDING ON 2ND DAY	NO	NO	NO	NO
57	1696464	NA	NA	NA	NA	NO	NO	NO	NO	NO
58	1389825	NA	NA	NA	NA	NO	NO	NO	NO	NO
59	1635864	NA	NA	NA	NA	NO	NO	NO	NO	NO
60	8526000	NA	NA	NA	NA	NO	NO	NO	NO	NO
61	1648804	NA	NA	NA	NA	NO	NO	NO	NO	NO
62	1643912	NA	NA	NA	NA	NO	NO	NO	NO	NO
63	1673276	NA	NA	NA	NA	NO	NO	NO	NO	NO
64	1635864	NA	NA	NA	NA	NO	NO	NO	NO	NO
65	1695308	NA	NA	NN	NA	NO	NO	NO	NO	NO
66	1621281	NA	NA	NA	NA	NO	NO	NO	NO	NO
67	1399095	NA	NA	NA	NA	NO	NO	NO	NO	NO
68	1521223	NA	NA	NA	NA	YES 5TH DAY ADR SAOKED GAUZE PIECE KEPT , CLEAXANE HOLDED	NO	NO	NO	NO
69	1372799	NA	NA	NA	NA	NO	NO	NO	NO	NO
70	1673276	NA	NA	NA	NA	NO	NO	NO	NO	NO
71	1711406	NA	NA	NA	NA	NO	NO	NO	NO	NO
72	1629363	NA	NA	NA	NA	NO	NO	NO	NO	NO
73	1715586	NA	NA	NA	NA	NO	NO	NO	NO	NO
74	1652937	NA	NA	NA	NA	NO	NO	NO	NO	NO
75	1706671	NA	NA	NA	NA	3TH AND 4TH DAY ADR SOAKED GAUZE KEPT	NO	NO	NO	NO
76	1702441	NA	NA	NA	NA	NO	NO	NO	NO	NO

Sr. No	MRD No.	Diagnosis	Type of tracheostomy	Indications of tracheostomy	Cervical Spine injury	if, yes level of injury	Days on mechanical ventilation prior to tracheostomy	Date of the procedure				
-	-	-	-	Type of respiratory failure	-	-	-	-	Age(yrs)	Height(m)	Sex	Weight(Kg)
77	1647904	P/O/C/O Decompression craniectomy i/v/o left ganglisocapsular bleed,IVH	HT	PROLONGED VENTILATION	NO	-	7	01-11-2013	31	1.77	M	82
78	1600028	A/H/O RSA P/O/C/O Decompression craniectomy Right ICH	PDT	AIRWAY PROTECTION	NO	-	4	10-05-2023	59	1.72	M	75
79	1639861	P/O/C/O Decompression craniectomy i/v/o IVH ,HTN	HT	AIRWAY PROTECTION	NO	-	3	30/12/23	43	1.7	M	75
80	1638306	P/O/C/O Decompresion craniectomy i/v/o EDH , B/L ZM#	HT	WEANING	NO	-	4	18/12/23	65	1.67	M	65
81	1372799	P/O/C/O Decompression craniectomy,left MCA infarct,CAD,DM.HTN,AKI	HT	SECURE AIRWAY	NO	-	7	18/3/23	57	1.65	M	85
82	1667466	P/O/C/O Decompression craniectomy i/v/o SDH post RSA	PDT	AIRWAY PROTECTION	NO	-	2	02-09-2023	38	1.72	M	95
83	1400778	A/H/O Fall from Height ,SDH,ICH,Multiple Ribs#	HT	AIRWAY PROTECTION	NO	-	4	25/11/22	68	1.67	M	68
84	1405431	P/O/C/O Decompression craniectomy i/v/o SDH post RSA	HT	AIRWAY PROTECTION	NO	-	2	07-02-2023	28	1.72	M	80
85	1355089	c/o Right gangliocapsular bleed ,HTN,Seizure disorder	HT	AIRWAY PROTECTION	NO	-	3	06-06-2023	57	1.82	M	73
86	1626330	p/o/c/o deompression craniectomy i/v/o SDH,HTN,DM,CAD	PDT	AIRWAY PROTECTION	NO	-	5	13/10/2023	65	1.75	M	88
87	1406286	P/O/C/O Deomcompresssion craniectomy i/v/o IVH	PDT	SECURE AIRWAY	NO	-	2	11-03-2022	62	1.77	M	70
88	1405268	P/O/C/O EVD Insertion i/v/o IVH,ICH,Accelrated HTN	HT	AIRWAY PROTECTION	NO	-	3	11-04-2022	54	1.62	F	60
89	1405408	P/O/C/O Decompression craniectom i/v/o SAH,SDH Post RSA	PDT	AIRWAY PROTECTION	NO	-	4	11-04-2022	17	1.67	M	50
90	1399107	P/O/C/O Decompression craniectomy i/v/o ICH Post RSA,DM,AKI,CAD	HT	WEANING AND AIRWAY PROTECTION	NO	-	9	27/10/22	67	1.6	M	108
91	1702441	C/O Aneurysm bleed,SAH,HTN,DM	PDT	AIRWAY PROTECTION	NO	-	9	04-03-2023	71	1.7	M	62
92	1242986	A/H/O RSA,SAH,HTN,CKD	HT	AIRWAY PROTECTION	NO	-	8	23/04/2023	61	1.8	M	84
93	1399659	P/O/C/O Decompression craniectom i/v/o SAH,SDH Post RSA	HT	WEANING AND AIRWAY PROTECTION	NO	-	5	23/10/2023	55	1.65	M	78
94	1398401	P/O/C/O EVD Insertion i/v/o IVH,ICH	PDT	AIRWAY PROTECTION	NO	-	6	22/10/22	67	1.72	M	65
95	171416	C/O ICH,DM,HTN,CKD	PDT	AIRWAY PROTECTION	NO	-	12	25/04/2023	62	1.7	M	60
96	1485300	P/O/C/O Decompression craniectom i/v/o ICH,HTN	HT	AIRWAY PROTECTION	NO	-	5	25-03-2023	55	1.65	F	67
97	1622505	P/O/C/O Decompression craniectomy i/v/o SDH EDH	PDT	AIRWAY PROTECTION	NO	-	5	18-11-2023	32	1.73	M	68
98	1622082	C/O RSA Maxillofacial Fracture ,haemorrhagic contusion	PDT	AIRWAY PROTECTION	NO	-	5	17-11-2023	16	1.65	M	60
99	1722645	p/o/c/o Decompression craniectomy i/v/o SDH Post Fall	PDT	AIRWAY PROTECTION	NO	-	9	07-05-2023	88	1.68	M	53
100	1406402	p/o/c/o Decompression craniectom i/v/o IVH POST RSA	PDT	SECURE AIRWAY	NO	-	7	08-11-2022	64	1.78	M	95
101	1606419	A/H/O RSA,SDH,IVH,DM,HTN	PDT	AIRWAY PROTECTION	NO	-	6	12-02-2023	42	1.73	M	75
102	1646297	A/H/O DOMESTIC FALL ,IVH	HT	SECURE AIRWAY	NO	-	6	02-01-2023	66	1.8	M	84
103	1722926	P/O/C/O Decompression craniectomy i/v/o SAH, Right MCA infarct post RSA	PDT	AIRWAY PROTECTION	NO	-	6	04-05-2023	17	1.8	M	50
104	1581902	C/O RSA ,Faciomaxillary injury,SAH,IVH	PDT	SECURE AIRWAY	NO	-	5	15-12-2022	65	1.7	M	75
105	1394316	C/O Right cerebellar infarct	HT	SECURE AIRWAY	NO	-	2	27-10-2022	45	1.73	M	85
106	1652937	P/O/C/Odecompression craniectomy i/v/o SDH post RSA	HT	PROLONGED VENTILATION	NO	-	5	10-12-2022	45	1.73	M	80
107	1398401	P/O/C/O EVD insertion , left thalamic bleed,ICH,HTN	PDT	SECURE AIRWAY	NO	-	6	21-10-2022	55	1.68	M	70
108	1399107	C/O Vascular infarct,meningitis	HT	PROLONGED VENTILATION	NO	-	6	27-10-2022	40	1.78	M	70
109	1403204	c/o accelerated HTN,ICH	PDT	AIRWAY PROTECTION	NO	-	7	31-10-2022	60	1.8	M	80
110	1398364	Left PCA Infarct , DM	HT	PROLONGED VENTILATION	NO	-	5	31-10-2022	75	1.6	F	65
111	1416416	P/O/C/O endovascular coiling i/v/o Right MCA aneurysm	PDT	SECURE AIRWAY	NO	-	5	25-11-2022	72	1.78	M	81
112	1415188	c/o RSA ,FACIOMAXILLARY INJURY,IVH	HT	SECURE AIRWAY	NO	-	7	22-11-2022	40	1.68	M	70

Sr. No	MRD No.	Baseline characateristics				Sequential Organ failure Assesment (SOfA) score					INVESTIGATIONS	-	-	-	-	-	-
-	-	Neck circumference(cm)	Steromental distance(cm)	Thyromental distance(cm)	Neck Surface landmark palpable(cm)	PaO2 (mm Hg)	Glasgow coma score(/15)	Mean arterial pressure(mm Hg)	Platelet counts(10^3/ul)	Serum creatine(mg%)	PLATLET COUNT	PTI/INR	HAEMOGLOBIN	CREATNINE	UREA	SERUM SODIUM	SERUM POTASSIUM
77	1647904	35	12.6	6.7	YES	183	3	96	3.4	0.94	314	13.1/1.20	11.6	0.94	48	152	3.5
78	1600028	36	12.7	6.5	YES	130	4	102	134	0.56	134	11.2/1.03	9.9	0.96	38	134	3.91
79	1639861	34	12.7	6.5	YES	90	4	82	376	1.06	376	12.4/1.20	13.4	1.06	47	150	4.06
80	1638306	34	12.5	6.5	YES	238	4	94	172	0.93	172	13.1/1.20	9.9	0.93	27	143	3.07
81	1372799	35	12.6	6.5	YES	271	7	75	233	1.04	283	11.6/1.06	11.4	1.04	52	136	4.1
82	1667466	37	12.7	6.6	YES	90	4	98	110	0.86	110	11.4/1.05	11.7	0.86	13	142	4.64
83	1400778	34	12.6	6.7	YES	90	4	96	100	0.57	100	13.2/1.21	9.3	0.57	36	139	4.11
84	1405431	36	12.7	6.7	YES	90	5	92	150	0.85	150	11/1.01	10.7	0.85	22	138	3.58
85	1355089	37	12.7	6.6	YES	135	3	78	257	0.57	257	10.8.1.10	10.2	0.57	56	151	3.4
86	1626330	36	12.8	6.7	YES	271	3	104	124	1.71	124	11.2/1.2	8.9	1.71	45	143	3.6
87	1406286	35	12.7	6.6	YES	78	5	102	197	1.88	197	10.7/0.98	10.3	0.88	63	144	3.09
88	1405268	35	12.6	6.5	YES	78	6	92	160	0.58	160	11.8/1.08	12.5	0.58	29	141	3.97
89	1405408	34	12.6	6.5	YES	78	4	84	222	0.73	222	12.9/1.18	13.3	0.73	33	141	3.63
90	1399107	38	12.6	6.5	YES	90	4	98	178	0.81	178	14/1.28	8.7	0.81	65	141	3.58
91	1702441	36	12.7	6.6	YES	90	5	96	190	1.11	190	10.8/0.99	12.2	1.11	62	146	3.38
92	1242986	37	12.8	6.7	YES	92	6	88	90	7.5	90	12.8/1.17	7.2	7.5	189	139	3.74
93	1399659	34	12.6	6.5	YES	175	6	120	289	0.58	289	11.5/1.05	12.4	0.58	32	137	3.95
94	1398401	34	12.6	6.5	YES	134	6	84	124	1.04	124	12.6/1.15	11.7	1.04	65	138	3.75
95	171416	35	12.5	6.5	YES	78	7	80	223	0.86	223	26/2.36	12.4	0.86	57	135	3.48
96	1485300	34	12.6	6.5	YES	291	4	102	126	0.83	126	14.0/1.28	12.3	0.83	14	142	3.67
97	1622505	35	12.7	6.6	YES	223	5	96	301	0.87	303	11.4/1.05	8	0.87	19	138	3.62
98	1622082	34	12.6	6.5	YES	201	5	90	324	0.81	324	15.6/1.43	10.9	0.81	73	137	4.21
99	1722645	35	12.6	6.4	YES	93	6	94	210	0.61	210	15.2/1.21	8.4	0.61	53	135	3.52
100	1406402	35	12.7	6.7	YES	70	3	90	205	0.63	205	10.5/0.96	11.3	0.63	44	137	3.85
101	1606419	36	12.7	6.7	YES	114	4	88	130	1.02	130	14/0.98	13.2	0.54	26	148	3.8
102	1646297	35	12.7	5.6	YES	130	4	140	140	0.84	140	11.2/1.20	12	0.84	34	139	4
103	1722926	35	12.6	6.7	YES	150	6	78	2.65	0.77	265	12.3/1.13	10.2	0.77	17	140	3.19
104	1581902	36	12.7	6.5	YES	78	5	92	130	0.91	130	10.2/1.4	13	0.91	21	136	3.4
105	1394316	37	12.7	6.5	YES	90	5	92	200	1.4	200	17.2/1.57	10	1.4	90	146	4.5
106	1652937	37	12.6	6.5	YES	102	3	70	220	0.92	220	11.9/1.02	11	0.92	40	140	3.7
107	1398401	34	12.5	6.5	YES	90	6	100	150	0.36	150	10.4/0.95	10.2	0.68	19	135	3.54
108	1399107	36	12.7	6.7	YES	180	6	92	160	0.45	160	10.2/1.12	9.8	0.45	28	138	3.45
109	1403204	36	12.7	6.6	YES	78	3	112	148	0.98	148	12.8/1.08	11.8	0.98	42	137	3.8
110	1398364	32	12.4	6.3	YES	120	5	90	300	0.23	300	15.7/1.34	10.1	0.23	23	140	4.05
111	1416416	37	12.6	6.6	YES	74	5	95	148	1.1	148	15.5/1.40	13.2	1.1	24	136	4
112	1415188	34	12.4	6.5	YES	180	7	84	167	0.84	167	11.4/1.02	12	0.84	20	142	3.5

Sr. No	MRD No.	-	MEDICATIONS GIVEN BEFORE PROCEDURE	-	-	PRE PROCEDURE VITALS	-	-	-	-	PRECEDURAL VITALS	-	AT 0 MIN	-	-	PROCEDURAL VITALS AT 5 MIN	-	-	-	-	POST PREOCEUDRAL VITALS	-	-	-	-
-	-	SERUM CHLORIDE	FENTANL	MIDAZOLAM	ATRACURIUM	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR
77	1647904	109	100	4	50	92	148	97	100	16	110	130	94	100	16	102	150	117	100	16	96	150	117	100	14
78	1600028	94	100	2	25	112	134	101	100	20	110	130	103	100	18	108	136	108	100	18	100	140	113	100	20
79	1639861	100	100	1	50	84	100	80	98	20	82	112	83	98	20	80	100	73	97	22	86	100	73	97	22
80	1638306	102	100	4	50	82	134	97	100	20	84	136	96	100	20	86	140	100	100	20	90	142	102	100	20
81	1372799	96	100	3	50	96	90	70	100	14	94	94	74	100	12	96	95	75	98	12	96	100	73	98	16
82	1667466	106	100	5	25	104	132	96	100	14	106	140	102	100	14	110	148	102	100	16	112	156	110	100	16
83	1400778	97	100	4	50	70	140	93	100	18	72	137	94	100	18	74	138	98	100	18	64	136	96	100	18
84	1405431	101	100	4	50	78	140	94	100	20	76	138	96	100	20	74	136	90	100	20	72	130	92	100	20
85	1355089	105	100	4	50	82	130	80	100	20	84	128	76	100	20	86	126	74	100	20	88	130	78	100	20
86	1626330	105	100	4	50	112	146	105	100	28	110	149	106	100	28	104	140	100	100	28	94	130	87	100	28
87	1406286	102	100	5	50	68	140	103	100	18	70	136	100	100	18	72	138	99	100	18	64	130	94	100	18
88	1405268	104	100	5	50	72	138	93	100	18	76	142	95	100	18	78	136	99	100	18	80	130	93	100	18
89	1405408	102	50	10	50	80	118	86	100	20	84	120	85	100	20	86	126	89	100	20	82	118	91	100	20
90	1399107	103	100	3	50	110	130	97	100	20	105	134	102	100	20	107	132	104	100	20	98	128	96	100	20
91	1702441	78	50	5	50	84	152	97	100	20	86	150	98	100	20	82	146	95	100	20	88	148	100	100	18
92	1242986	94	50	5	50	100	118	85	100	14	98	120	87	100	12	92	140	99	100	12	82	158	117	100	12
93	1399659	100	100	5	50	86	168	122	100	20	76	170	117	100	20	80	174	115	100	20	78	178	121	100	20
94	1398401	93	100	3	50	70	110	83	100	18	72	110	86	100	16	70	114	89	100	16	68	112	84	100	16
95	171416	93	100	4	50	92	116	80	98	22	99	96	79	98	26	96	90	74	98	22	96	120	82	98	22
96	1485300	103	100	5	50	112	146	101	98	14	110	144	103	98	14	114	148	107	98	14	112	140	100	98	14
97	1622505	100	70	4	50	98	116	85	100	22	96	120	89	100	18	92	122	94	100	18	90	124	96	100	18
98	1622082	104	50	3	50	120	100	93	100	20	118	100	87	100	20	114	104	87	100	20	116	102	83	100	20
99	1722645	93	50	2	100	116	146	95	100	12	114	136	87	100	16	114	130	89	100	16	112	126	79	100	18
100	1406402	98	100	5	50	74	114	91	100	20	78	110	89	100	20	76	108	87	100	20	80	118	90	100	10
101	1606419	98	50	5	50	80	120	88	99	16	88	118	88	99	16	92	116	86	99	10	94	110	84	99	16
102	1646297	101	50	2	50	78	140	108	100	18	80	138	102	100	18	84	136	98	100	18	88	142	104	100	18
103	1722926	103	50	5	50	56	120	93	100	12	52	110	82	100	12	54	108	79	100	12	68	108	77	100	12
104	1581902	102	50	5	50	84	108	96	98	18	86	110	98	98	18	82	114	94	98	16	84	100	92	97	18
105	1394316	98	100	5	50	100	148	103	100	20	102	148	104	100	20	106	140	99	100	20	110	145	99	100	20
106	1652937	100	100	5	50	90	120	80	98	20	88	120	83	98	20	106	164	95	97	20	100	140	93	97	20
107	1398401	100	50	5	50	70	146	105	99	16	72	150	110	99	16	70	146	105	99	16	68	148	100	99	16
108	1399107	102	50	5	50	100	130	90	100	18	98	138	86	100	16	92	140	86	100	16	90	142	84	100	18
109	1403204	9.4	100	5	50	92	148	109	100	20	94	150	110	100	20	96	156	108	100	20	100	152	110	110	20
110	1398364	102	100	3	50	72	124	94	98	18	74	130	96	98	18	72	128	90	98	18	76	126	92	98	18
111	1416416	94	100	5	50	90	130	98	100	20	92	136	96	100	20	94	140	101	100	20	96	142	99	100	20
112	1415188	101	100	3	50	76	110	84	100	18	74	104	83	100	18	78	108	82	100	18	80	107	84	100	18

Sr. No	MRD No.	PROCEDURAL RECORDINGS	-	-	-	-	-	PROCEDURAL COMPLICATIONS	-	-
-	-	IDENTIFICATION OF LANDMARK BY PALPATION	ASSESSMENT TIME	SITE OF NEEDLE INSERTION	NUMBER OF ATTEMPTS FOR SUCCESSFUL NEEDLE INSERTION	NUMBER OF ATTEMTS FOR SUCCESSFUL TRACHEOSTOMY TUBE	PROCEDURE TIME	MINOR BLEEDING	BLEEDING REQUIRING INTERVENTION	SURGICAL EMPHYSEMA
77	1647904	YES	1MIN	T2 TO T3	1	1	2.30MIN	NO	NO	NO
78	1600028	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
79	1639861	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
80	1638306	YES	1MIN	T2 TO T3	1	1	3.20MIN	NO	NO	NO
81	1372799	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
82	1667466	YES	1MIN	T2 TO T3	1	1	3.30MIN	NO	NO	NO
83	1400778	YES	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
84	1405431	YES	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
85	1355089	YES	1MIN	T2 to T3	1	1	3.50MIN	NO	NO	NO
86	1626330	YES	1MIN	T2 to T3	1	1	2.20MIN	NO	NO	NO
87	1406286	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
88	1405268	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
89	1405408	YES	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
90	1399107	YES	1MIN	T2 to T3	1	1	4.0MIN	NO	NO	NO
91	1702441	YES	1MIN	T2 to T3	1	1	3.0MIN	NO	NO	NO
92	1242986	YES	1MIN	T2 to T3	1	1	3.0MIN	NO	NO	NO
93	1399659	YES	1MIN	T2 to T3	1	1	2.40MIN	NO	NO	NO
94	1398401	YES	1MIN	T2 to T3	1	1	2.30MIN	NO	NO	NO
95	171416	YES	1MIN	T2 to T3	1	1	3.40MIN	NO	NO	NO
96	1485300	YES	1MIN	T2 TO T3	1	1	3.30MIN	NO	NO	NO
97	1622505	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
98	1622082	YES	1MIN	T2 TO T3	1	1	2.50MIN	NO	NO	NO
99	1722645	YES	1MIN	T2 TO T3	1	1	3.20MIN	NO	NO	NO
100	1406402	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
101	1606419	YES	1MIN	T2 TO T3	1	1	3.00MIN	NO	NO	NO
102	1646297	YES	1MIN	T2 TO T3	1	1	3.20MIN	NO	NO	NO
103	1722926	YES	1MIN	T2 TO T3	1	1	3.20MIN	NO	NO	NO
104	1581902	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
105	1394316	YES	1MIN	T2 TO T3	1	1	2.60MIN	NO	NO	NO
106	1652937	YES	1MIN	T2 TO T3	1	1	2.20MIN	NO	NO	NO
107	1398401	YES	1MIN	T2 TO T3	1	1	2.20MIN	NO	NO	NO
108	1399107	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
109	1403204	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
110	1398364	YES	1MIN	T2 TO T3	1	1	4.10MIN	NO	NO	NO
111	1416416	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
112	1415188	YES	1MIN	T2 TO T3	1	1	2.20MIN	NO	NO	NO

Sr. No	MRD No.	-	-	-	-	-	-	-	-	EVENTS DURING TRANSFER TO AND FROM ICU TO OT	-
-	-	PNEUMOTHORAX	TRACHEAL INJURY	ESOPHAGEAL INJURY	PARATRACHEAL PLACEMENT/FALSE TRACT PLACEMENT	HEMODYNAMIC INSTABILITY	DESATURATION	RUPTUREED ETT CUFF	ANY OTHER	ACCIDENTAL DECANNULATION	DESATUTRATION
77	1647904	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
78	1600028	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
79	1639861	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
80	1638306	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
81	1372799	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
82	1667466	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
83	1400778	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
84	1405431	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
85	1355089	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
86	1626330	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
87	1406286	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
88	1405268	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
89	1405408	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
90	1399107	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
91	1702441	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
92	1242986	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
93	1399659	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
94	1398401	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
95	171416	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
96	1485300	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
97	1622505	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
98	1622082	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
99	1722645	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
100	1406402	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
101	1606419	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
102	1646297	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
103	1722926	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
104	1581902	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
105	1394316	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
106	1652937	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
107	1398401	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
108	1399107	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
109	1403204	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
110	1398364	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
111	1416416	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
112	1415188	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA

Sr. No	MRD No.	-	-	-	-	POST PROCEDURE COMPLICATIONS	-	-	-	-
-	-	BLEEDING	HEMODYNAMIC INSTABLITY	ARRHYTHMIA	ANY OTHER	BLEEDING	SOFT TISSUE INJURY	ACCIDENTAL DECCANULATION/TUBE DISPLACEMENT	ANY FINDING ON CHEST X RAYDONE AFTER 2 HRS	ANY OTHER
77	1647904	NA	NA	NA	NA	NO	NO	NO	NO	NO
78	1600028	NA	NA	NA	NA	NO	NO	NO	NO	NO
79	1639861	NA	NA	NA	NA	NO	NO	NO	NO	NO
80	1638306	NA	NA	NA	NA	NO	NO	NO	NO	NO
81	1372799	NA	NA	NA	NA	NO	NO	NO	NO	NO
82	1667466	NA	NA	NA	NA	NO	NO	NO	NO	NO
83	1400778	NA	NA	NA	NA	NO	NO	NO	NO	NO
84	1405431	NA	NA	NA	NA	NO	NO	NO	NO	NO
85	1355089	NA	NA	NA	NA	NO	NO	NO	NO	NO
86	1626330	NA	NA	NA	NA	6TH AND 7TH DAY ADR SOAKED GAUZE KEPT	NO	NO	NO	NO
87	1406286	NA	NA	NA	NA	NO	NO	NO	NO	NO
88	1405268	NA	NA	NA	NA	NO	NO	NO	NO	NO
89	1405408	NA	NA	NA	NA	NO	NO	NO	NO	NO
90	1399107	NA	NA	NA	NA	NO	NO	NO	NO	NO
91	1702441	NA	NA	NA	NA	NO	NO	NO	NO	NO
92	1242986	NA	NA	NA	NA	NO	NO	NO	NO	NO
93	1399659	NA	NA	NA	NA	NO	NO	NO	NO	NO
94	1398401	NA	NA	NA	NA	NO	NO	NO	NO	NO
95	171416	NA	NA	NA	NA	3RD DAY ADR SAOKED GAUZE KEPT	NO	NO	NO	NO
96	1485300	NA	NA	NA	NA	NO	NO	NO	NO	NO
97	1622505	NA	NA	NA	NA	NO	NO	NO	NO	NO
98	1622082	NA	NA	NA	NA	NO	NO	NO	NO	NO
99	1722645	NA	NA	NA	NA	NO	NO	NO	NO	NO
100	1406402	NA	NA	NA	NA	NO	NO	NO	NO	NO
101	1606419	NA	NA	NA	NA	NO	NO	NO	NO	NO
102	1646297	NA	NA	NA	NA	NO	NO	NO	NO	NO
103	1722926	NA	NA	NA	NA	NO	NO	NO	NO	NO
104	1581902	NA	NA	NA	NA	NO	NO	NO	NO	NO
105	1394316	NA	NA	NA	NA	3RD AND 4TH DAY ADR SOAKED GAUZE KEPT	NO	NO	NO	NO
106	1652937	NA	NA	NA	NA	NO	NO	NO	NO	NO
107	1398401	NA	NA	NA	NA	NO	NO	NO	NO	NO
108	1399107	NA	NA	NA	NA	NO	NO	NO	NO	NO
109	1403204	NA	NA	NA	NA	NO	NO	NO	NO	NO
110	1398364	NA	NA	NA	NA	NO	NO	NO	NO	NO
111	1416416	NA	NA	NA	NA	NO	NO	NO	NO	NO
112	1415188	NA	NA	NA	NA	NO	NO	NO	NO	NO

Sr. No	MRD No.	Diagnosis	Type of tracheostomy	Indications of tracheostomy	Cervical Spine injury	if, yes level of injury	Days on mechanical ventilation prior to tracheostomy	Date of the procedure				
-	-	-	-	Type of respiratory failure	-	-	-	-	Age(yrs)	Height(m)	Sex	Weight(Kg)
113	1399659	C/O Right MCA Infarct, hemiplegia,DM	HT	AIRWAY PROTECTION	NO	-	7	23-10-2022	68	1.7	M	75
114	1396855	A/H/O RSA,SAH,IVH,AKI,DM	PDT	AIRWAY PROTECTION	NO	-	5	21-10-2022	50	1.7	M	70
115	1422903	P/O/C/O Decompression craniectom i/v/o SDH Post RSA	HT	PROLONGED VENTILATION	NO	-	5	02-12-2022	36	1.8	M	82
116	1449197	C/O EVD Insertion i/v/o IVH,SAH,HTN	PDT	AIRWAY PROTECTION	NO	-	4	24/01/2023	60	1.7	M	65
117	1444807	P/O/C/O Decompression craniectomy i/v/o ICH,HTN,DM	HT	AIRWAY PROTECTION	NO	-	6	17-01-2023	55	1.7	M	75
118	1444595	P/O/C/O Decompression craniectomy i/v/o ganglicapsular bleed, HTN	PDT	AIRWAY PROTECTION	NO	-	3	16-01-2023	45	1.8	M	80
119	1439328	C/O Vascular infarct,DM	HT	PROLONGED VENTILATION	NO	-	4	04-01-2023	50	1.68	M	60
120	1428015	A/H/O RSA,SDH,DAI,Haemorrhagic contusion	PDT	AIRWAY PROTECTION	NO	-	3	14-12-2022	35	1.8	M	80
121	1466920	c/o Domestic fall ,SDH,Haemorrhagic contusion,HTN	HT	SECURE AIRWAY	NO	-	3	23-02-2023	60	1.7	M	75
122	1459683	C/O Decompression craniectomy i/v/o SDH post RSA	HT	SECURE AIRWAY	NO	-	5	16-02-2023	45	1.8	M	78
123	1459564	C/O RSA,Faciomaxillar injur,SAH	PDT	AIRWAY PROTECTION	NO	-	6	14-02-2023	25	1.8	M	80
124	1463397	P/O/C/O Decompression craniectomy,left MCA infarct,Duroplasty	PDT	AIRWAY PROTECTION	NO	-	3	18-02-2023	60	1.7	M	75
125	205995	p/o/c/o EVD insertion i/v/o SAH post RSA, DM	HT	PROLONGED VENTILATION	NO	-	5	18-02-2023	64	1.7	M	68
126	1491689	A/H/O RSA,SDH,IVH,DM,HTN	PDT	AIRWAY PROTECTION	NO	-	7	03-04-2023	50	1.7	M	70
127	148990	P/O/C/O Decompression craniectomyi/v/o SDH POST RSA	PDT	SECURE AIRWAY	NO	-	7	03-04-2023	45	1.68	M	65
128	1474938	C/O Left cerebellar infart,DM	HT	AIRWAY PROTECTION	NO	-	5	06-03-2023	48	1.75	M	70
129	1483728	c/o EVD Insertion i/v/o IVH,ICH,Accelerated HTN	HT	AIRWAY PROTECTION	NO	-	8	23-03-2023	48	1.73	M	70
130	1488696	C/O mca infarct,htn,dm	PDT	AIRWAY PROTECTION	NO	-	5	01-04-2023	70	1.78	M	78
131	1440329	C/O left MCA Infarct,DM	HT	AIRWAY PROTECTION	NO	-	5	04-01-2023	59	1.78	M	78
132	1503490	P/O/C/O Decompression craniectomy i/v/o SDH Post RSA	PDT	AIRWAY PROTECTION	NO	-	3	24-04-2023	25	1.8	M	68
133	1502649	C/O RSA,DAI,EDH	HT	AIRWAY PROTECTION	NO	-	4	24-04-2023	36	1.8	M	78
134	1511701	P/C/O Decompression craniectom i/v/o ICH,HTN	HT	SECURE AIRWAY	NO	-	8	08-05-2023	50	1.6	F	70
135	1517159	P/O/C/O Decompression craniectom i/v/o SAH,SDH Post RSA	PDT	AIRWAY PROTECTION	NO	-	4	19-05-2023	20	1.68	M	55
136	1516345	C/O ACUTE CVA,DM,Sezizure disorder	PDT	AIRWAY PROTECTION	NO	-	5	22-05-2023	68	1.8	M	75
137	1494542	p/o/c/o Decomrpression craniectoy i/v/o SDH post RSA	HT	PROLONGED VENTILATION	NO	-	4	19-04-2023	30	1.8	M	78
138	1520141	C/O Endovascular coiling i/v/o Right MCA aneurysm	PDT	AIRWAY PROTECTION	NO	-	4	23-05-2023	72	1.8	M	78
139	1507725	c/o left ICA Thrombosis, hemiplegia	HT	PROLONGED VENTILATION	NO	-	4	08-05-2023	60	1.6	F	65
140	1553315	A/H/O RSA,SDH,Haemorrhagic contusion	HT	SECURE AIRWAY	NO	-	4	19-07-2023	27	1.73	M	75
141	1565993	c/o gangliocapsular bleed,HTN	HT	SECURE AIRWAY	NO	-	7	08-08-2023	45	1.68	M	70
142	1559468	C/O EVD insertion i/v/o IVH post RSA	PDT	AIRWAY PROTECTION	NO	-	3	01-01-2023	37	1.8	M	76
143	155332	P/O/C/O Decompression craniectomy i/v/o SDH POST RSA	HT	AIRWAY PROTECTION	NO	-	5	24-07-2023	28	1.83	M	87
144	1561701	A/H/O RSA , SAH, haemorrhagic contusion, splenic injury	PDT	AIRWAY PROTECTION	NO	-	3	01-08-2023	50	1.73	M	75
145	1525152	c/o RSA,SAH,IVH	PDT	AIRWAY PROTECTION	NO	-	5	12-06-2023	58	1.68	M	65
146	1552656	Right cerebellar infarct,DM	HT	PROLONGED VENTILATION	NO	-	4	17-07-2023	58	1.7	M	65
147	1536529	P/O/C/O Decompression craniectomy i/v/o SDH Post RSA,DM	HT	SECURE AIRWAY	NO	-	4	20-06-2023	48	1.7	M	68
148	1530300	P/O/C/O Decompression craniectomy i/v/o basal ganglia bleed,HTN	PDT	AIRWAY PROTECTION	NO	-	6	09-08-2023	35	1.8	M	78
149	1447110	P/O/C/O EVD insertion i/v/o ICH Post RSA,DM	HT	AIRWAY PROTECTION	NO	-	3	01-02-2023	67	1.6	F	64
150	374448	p/o/c/o Decompression craniectomy i/v/o SDH,haemorrhagic contusion	PDT	SECURE AIRWAY	NO	-	5	15/05/23	36	1.65	F	68

Sr. No	MRD No.	Baseline characateristics				Sequential Organ failure Assesment (SOfA) score					INVESTIGATIONS	-	-	-	-	-	-
-	-	Neck circumference(cm)	Steromental distance(cm)	Thyromental distance(cm)	Neck Surface landmark palpable(cm)	PaO2 (mm Hg)	Glasgow coma score(/15)	Mean arterial pressure(mm Hg)	Platelet counts(10^3/ul)	Serum creatine(mg%)	PLATLET COUNT	PTI/INR	HAEMOGLOBIN	CREATNINE	UREA	SERUM SODIUM	SERUM POTASSIUM
113	1399659	36	12.7	6.7	YES	138	7	84	160	0.83	160	15/1.42	9	0.83	20	138	4.5
114	1396855	35	12.6	6.5	YES	80	3	90	140	1.1	140	12/1.28	11	1.1	24	142	3.6
115	1422903	36	12.7	6.7	YES	78	3	104	200	0.9	104	11.7/1.24	13	0.9	40	142	4.35
116	1449197	36	12.7	6.5	YES	84	5	92	200	0.8	200	12.4/1.14	9.8	0.8	40	142	3.4
117	1444807	36	12.7	6.5	YES	100	6	104	150	0.45	150	12.5/1.14	11	0.45	30	146	3.5
118	1444595	36	12.7	6.7	YES	120	3	94	160	0.94	160	13.2/1.2	12	0.94	14	140	3.5
119	1439328	35	12.5	6.5	YES	84	4	80	138	1.1	138	10.4/0.93	11	1.1	24	136	3.6
120	1428015	35	12.7	6.7	YES	74	3	84	160	1.2	160	15/1.4	12	1.2	28	136	4.5
121	1466920	36	12.7	6.5	YES	78	3	80	158	1.2	158	15/1.6	12	1.2	24	138	3.5
122	1459683	35	12.6	6.7	YES	98	5	90	200	1.04	200	12/1.13	14	1.04	24	143	3.2
123	1459564	35	12.7	6.7	YES	88	6	90	147	1.8	147	10.8/1.2	10	1.8	84	146	3.5
124	1463397	34	12.6	6.5	YES	103	5	100	200	0.8	200	10.4/0.93	14	0.8	24	146	3.8
125	205995	35	12.7	6.5	YES	95	5	90	180	1.1	180	11/0.83	12.2	1.1	48	136	3.7
126	1491689	35	12.7	6.5	YES	130	6	80	160	1.4	160	14/1.2	12	1.4	28	146	3.5
127	148990	34	12.5	6.5	YES	78	6	98	180	1.2	180	13.2/1.2	11	1.2	38	135	4.5
128	1474938	36	12.7	6.7	YES	110	6	90	178	0.48	178	11/1.4	12.1	0.48	25	136	3.8
129	1483728	36	12.7	6.6	YES	90	5	100	154	1.04	154	12/1.5	11.4	1.04	40	136	4.5
130	1488696	35	12.6	6.5	YES	130	8	80	200	1.2	200	14/1.5	12	1.2	48	138	3.6
131	1440329	35	12.7	6.6	YES	150	8	88	164	1.1	164	12/1.1	12	1.1	24	146	3.4
132	1503490	36	12.7	6.7	YES	140	3	96	214	0.87	214	12.7/1.1	13	0.87	40	134	3.6
133	1502649	35	12.5	6.5	YES	220	4	96	306	2.29	306	12.8/1.24	12	2.29	110	142	4.5
134	1511701	34	12.5	6.5	YES	110	8	110	150	1.2	150	13/0.98	11	1.2	44	142	38
135	1517159	34	12.5	3.5	YES	88	4	80	200	0.83	200	12.2/1.18	13	0.83	34	136	4.5
136	1516345	36	12.6	6.5	YES	138	6	95	210	0.7	210	15.5/1.42	13.6	0.4	20	135	4.4
137	1494542	36	12.6	6.6	YES	110	4	90	280	1.4	280	11.4/1.20	12	1.4	18	134	4.5
138	1520141	35	12.7	6.6	YES	130	4	80	140	0.98	140	11.3/1.04	9.8	0.98	24	142	3.83
139	1507725	34	12.9	6.3	YES	90	8	88	200	0.9	200	120/1.24	13	0.9	28	142	3.6
140	1553315	35	12.6	6.5	YES	88	7	90	145	0.8	145	11.1/1.08	12	0.8	25	146	3.5
141	1565993	34	12.6	6.5	YES	180	7	84	210	0.73	210	12.1/0.94	9.8	0.73	34	136	3.5
142	1559468	36	12.7	6.7	YES	90	3	100	158	0.58	158	12/1.1	13	0.58	34	148	3.7
143	155332	36	12.7	6.7	YES	114	3	86	140	1.2	140	11/1.02	13	1.2	40	137	3.4
144	1561701	35	12.6	6.5	YES	140	3	98	148	1.2	148	10/0.98	10	1.2	40	142	3.5
145	1525152	34	12.5	6.5	NO	140	5	90	110	0.8	110	15.4/1.7	10	0.8	34	142	3.7
146	1552656	34	12.7	6.7	NO	92	4	94	140	0.8	140	11/1.2	14	0.8	30	140	3.8
147	1536529	37	12.6	6.5	YES	114	4	92	210	0.42	210	12/1.0	10.8	0.42	34	142	3.8
148	1530300	37	12.6	6.7	YES	200	6	100	170	0.84	170	11/1.1	12	0.84	48	142	3.7
149	1447110	34	12.6	6.5	YES	88	3	95	148	0.9	148	11.2/1.38	12	0.9	25	140	3.4
150	374448	34	12.4	6.5	YES	240	7	80	220	1.1	220	12.0/0.98	11.8	1.1	28	136	4.2

Sr. No	MRD No.	-	MEDICATIONS GIVEN BEFORE PROCEDURE	-	-	PRE PROCEDURE VITALS	-	-	-	-	PRECEDURAL VITALS	-	AT 0 MIN	-	-	PROCEDURAL VITALS AT 5 MIN	-	-	-	-	POST PREOCEUDRAL VITALS	-	-	-	-
-	-	SERUM CHLORIDE	FENTANL	MIDAZOLAM	ATRACURIUM	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR	HR	SAP	MAP	SPO2	RR
113	1399659	100	100	5	50	94	110	84	98	20	92	116	86	98	21	88	120	88	98	20	94	124	88	98	20
114	1396855	97	100	5	50	72	142	90	100	20	78	138	84	100	20	76	136	88	100	20	74	148	94	100	20
115	1422903	98	100	5	50	114	148	114	100	22	116	150	116	100	22	118	142	110	100	22	110	146	108	100	22
116	1449197	86	100	5	50	90	145	101	100	20	92	150	98	100	20	86	148	104	100	20	84	142	96	100	20
117	1444807	96	100	2	50	84	148	114	100	18	86	140	108	100	18	84	146	110	100	18	82	140	106	100	18
118	1444595	108	100	5	50	94	142	97	100	20	98	148	94	100	20	100	138	96	100	20	97	140	92	100	20
119	1439328	96	100	5	50	74	110	80	100	16	76	118	84	100	16	78	116	82	100	16	80	120	86	100	16
120	1428015	96	100	5	50	78	120	74	100	22	80	118	78	100	22	84	116	76	100	22	86	110	75	100	22
121	1466920	96	100	5	50	88	130	80	100	12	84	136	84	100	12	86	138	85	100	12	89	140	87	100	12
122	1459683	98	100	5	50	100	124	90	100	22	98	120	84	100	22	96	118	86	100	22	104	116	80	100	22
123	1459564	112	100	5	50	99	140	90	99	24	101	138	92	99	24	104	130	90	99	24	110	126	88	99	24
124	1463397	96	100	3	50	74	140	98	99	16	76	142	100	99	16	78	138	96	99	16	80	136	94	99	16
125	205995	96	100	5	50	84	150	96	98	20	88	148	94	98	20	88	146	90	98	20	90	142	92	98	20
126	1491689	106	50	5	50	74	120	80	100	22	76	124	82	100	22	78	126	84	100	22	70	120	84	100	22
127	148990	98	100	2	50	98	138	96	99	24	94	140	99	99	24	96	136	94	99	22	98	134	92	99	24
128	1474938	96	50	5	50	78	134	96	100	20	80	130	94	100	20	82	128	94	100	20	84	124	92	100	20
129	1483728	96	100	5	50	110	110	92	100	20	108	118	96	100	20	104	104	90	100	20	110	120	98	108	20
130	1488696	106	100	5	50	94	110	84	98	24	96	104	80	98	24	92	106	82	98	24	96	106	82	98	24
131	1440329	96	100	4	50	78	140	90	100	32	80	138	92	100	22	82	136	94	100	22	84	142	96	100	22
132	1503490	101	50	3	50	100	120	94	98	20	104	124	96	98	20	102	128	98	98	20	96	130	100	98	20
133	1502649	106	50	5	50	98	142	100	100	18	100	138	98	100	18	102	136	94	100	18	101	142	96	100	18
134	1511701	96	100	5	50	98	146	110	100	12	96	150	113	100	12	100	110	110	100	12	102	138	91	100	12
135	1517159	96	100	5	50	105	128	98	98	12	110	130	96	98	12	117	134	100	98	12	98	132	100	98	12
136	1516345	96	50	5	50	78	118	95	98	20	74	107	90	98	20	76	108	92	98	20	80	110	94	98	20
137	1494542	100	100	5	50	78	130	84	98	20	72	134	86	98	20	76	138	86	98	20	74	142	90	98	20
138	1520141	106	100	5	50	68	120	82	98	22	64	124	80	98	22	66	122	84	98	22	70	120	86	98	22
139	1507725	106	100	5	50	84	107	84	98	22	86	110	82	98	22	82	118	86	98	22	88	120	90	98	22
140	1553315	108	100	5	50	78	138	84	98	18	80	140	86	98	18	82	142	82	98	18	84	136	80	98	18
141	1565993	96	100	5	50	78	110	84	98	22	72	108	86	98	22	77	106	82	98	22	80	110	80	98	222
142	1559468	102	100	5	50	68	128	98	98	22	66	130	100	98	22	67	134	96	95	22	64	132	94	98	32
143	155332	106	100	5	50	88	118	86	100	24	84	114	82	100	24	80	110	80	100	24	86	112	84	100	24
144	1561701	102	100	5	5	78	128	94	100	18	76	130	98	100	18	72	136	100	100	18	78	134	94	100	18
145	1525152	92	100	5	5	88	148	96	98	20	90	150	100	98	20	92	146	94	98	20	96	147	92	98	20
146	1552656	106	50	5	50	72	150	94	100	22	78	146	96	100	22	80	148	92	100	22	82	140	90	100	22
147	1536529	98	100	5	5	78	130	90	100	22	76	134	92	100	22	74	138	96	100	22	80	140	120	100	22
148	1530300	98	100	5	50	60	134	98	100	22	62	138	96	100	22	64	140	100	100	22	68	142	104	100	22
149	1447110	107	100	5	5	98	142	95	100	22	96	138	94	100	22	94	140	90	100	22	100	136	86	100	22
150	374448	108	100	3	50	98	118	89	98	12	94	114	83	98	12	96	116	84	98	12	98	118	91	98	12

Sr. No	MRD No.	PROCEDURAL RECORDINGS	-	-	-	-	-	PROCEDURAL COMPLICATIONS	-	-
-	-	IDENTIFICATION OF LANDMARK BY PALPATION	ASSESSMENT TIME	SITE OF NEEDLE INSERTION	NUMBER OF ATTEMPTS FOR SUCCESSFUL NEEDLE INSERTION	NUMBER OF ATTEMTS FOR SUCCESSFUL TRACHEOSTOMY TUBE	PROCEDURE TIME	MINOR BLEEDING	BLEEDING REQUIRING INTERVENTION	SURGICAL EMPHYSEMA
113	1399659	YES	1MIN	T2 TO T3	1	1	4.40MIN	NO	NO	NO
114	1396855	YES	1MIN	T2 TO T3	1	1	3.50MIN	NO	NO	NO
115	1422903	YES	1MIN	T2 TO T3	1	1	2.50MIN	NO	NO	NO
116	1449197	YES	1MIN	T2 TO T3	1	1	2.50MIN	NO	NO	NO
117	1444807	YES	1MIN	T2 TO T3	1	1	4.40MIN	NO	NO	NO
118	1444595	YES	1MIN	T2 TO T3	1	1	2.30MIN	NO	NO	NO
119	1439328	YES	1MIN	T2 TO T3	1	1	4.20MIN	NO	NO	NO
120	1428015	YES	1MIN	T2 TO T3	1	1	2.50MIN	NO	NO	NO
121	1466920	YES	1MIN	T2 TO T3	1	1	2.50MIN	NO	NO	NO
122	1459683	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
123	1459564	YES	1MIN	T2 TO T3	1	1	3.50MIN	NO	NO	NO
124	1463397	YES	1MIN	T2 TO T3	1	1	2.30MIN	NO	NO	NO
125	205995	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
126	1491689	YES	1MIN	T2 TO T3	1	1	2.30MIN	NO	NO	NO
127	148990	YES	1MIN	T2 TO T3	1	1	3.30MIN	NO	NO	NO
128	1474938	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
129	1483728	YES	1MIN	T2 TO T3	1	1	3.50MIN	NO	NO	NO
130	1488696	YES	1MIN	T2 TO T3	1	1	3.50MIN	NO	NO	NO
131	1440329	YES	1MIN	T2 TO T3	1	1	4.30MIN	NO	NO	NO
132	1503490	YES	1MIN	T2 TO T3	1	1	3.20MIN	NO	NO	NO
133	1502649	YES	1MIN	T2 TO T3	1	1	3.50MIN	NO	NO	NO
134	1511701	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
135	1517159	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
136	1516345	YES	1MIN	T2 TO T3	1	1	3.50MIN	NO	NO	NO
137	1494542	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
138	1520141	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
139	1507725	YES	1MIN	T2 TO T3	1	1	4.30MIN	NO	NO	NO
140	1553315	YES	1MIN	T2 TO T3	1	1	3.50MIN	NO	NO	NO
141	1565993	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
142	1559468	YES	1MIN	T2 TO T3	1	1	2.40MIN	NO	NO	NO
143	155332	YES	1MIN	T2 TO T3	1	1	4.30MIN	NO	NO	NO
144	1561701	YES	1MIN	T2 TO T3	1	1	3.20MIN	NO	NO	NO
145	1525152	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
146	1552656	YES	1MIN	T2 TO T3	1	1	3.00MIN	NO	NO	NO
147	1536529	YES	1MIN	T2 TO T3	1	1	4.40MIN	NO	NO	NO
148	1530300	YES	1MIN	T2 TO T3	1	1	3.40MIN	NO	NO	NO
149	1447110	YES	1MIN	T2 TO T3	1	1	4.40MIN	NO	NO	NO
150	374448	YES	1MIN	T2 to T3	1	1	2.50MIN	NO	NO	NO

Sr. No	MRD No.	-	-	-	-	-	-	-	-	EVENTS DURING TRANSFER TO AND FROM ICU TO OT	-
-	-	PNEUMOTHORAX	TRACHEAL INJURY	ESOPHAGEAL INJURY	PARATRACHEAL PLACEMENT/FALSE TRACT PLACEMENT	HEMODYNAMIC INSTABILITY	DESATURATION	RUPTUREED ETT CUFF	ANY OTHER	ACCIDENTAL DECANNULATION	DESATUTRATION
113	1399659	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
114	1396855	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
115	1422903	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
116	1449197	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
117	1444807	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
118	1444595	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
119	1439328	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
120	1428015	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
121	1466920	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
122	1459683	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
123	1459564	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
124	1463397	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
125	205995	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
126	1491689	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
127	148990	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
128	1474938	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
129	1483728	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
130	1488696	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
131	1440329	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
132	1503490	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
133	1502649	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
134	1511701	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
135	1517159	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
136	1516345	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
137	1494542	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
138	1520141	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
139	1507725	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
140	1553315	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
141	1565993	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
142	1559468	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
143	155332	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
144	1561701	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
145	1525152	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
146	1552656	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
147	1536529	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
148	1530300	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
149	1447110	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA
150	374448	NO	NO	NO	NO	NO	NO	NO	NO	NA	NA

Sr. No	MRD No.	-	-	-	-	POST PROCEDURE COMPLICATIONS	-	-	-	-
-	-	BLEEDING	HEMODYNAMIC INSTABLITY	ARRHYTHMIA	ANY OTHER	BLEEDING	SOFT TISSUE INJURY	ACCIDENTAL DECCANULATION/TUBE DISPLACEMENT	ANY FINDING ON CHEST X RAYDONE AFTER 2 HRS	ANY OTHER
113	1399659	NA	NA	NA	NA	NO	NO	NO	NO	NO
114	1396855	NA	NA	NA	NA	NO	NO	NO	NO	NO
115	1422903	NA	NA	NA	NA	NO	NO	NO	NO	NO
116	1449197	NA	NA	NA	NA	NO	NO	NO	NO	NO
117	1444807	NA	NA	NA	NA	NO	NO	NO	NO	NO
118	1444595	NA	NA	NA	NA	NO	NO	NO	NO	NO
119	1439328	NA	NA	NA	NA	NO	NO	NO	NO	NO
120	1428015	NA	NA	NA	NA	NO	NO	NO	NO	NO
121	1466920	NA	NA	NA	NA	NO	NO	NO	NO	NO
122	1459683	NA	NA	NA	NA	NO	NO	NO	NO	NO
123	1459564	NA	NA	NA	NA	3RD AND 4TH DAY ADR SOAKED GAUZE KEPT, CLEXANE HOLDED	NO	NO	NO	NO
124	1463397	NA	NA	NA	NA	NO	NO	NO	NO	NO
125	205995	NA	NA	NA	NA	NO	NO	NO	NO	NO
126	1491689	NA	NA	NA	NA	NO	NO	NO	NO	NO
127	148990	NA	NA	NA	NA	4TH AND 5TH DAY ADR SOAKED GAUZE KEPT	NO	NO	NO	NO
128	1474938	NA	NA	NA	NA	NO	NO	NO	NO	NO
129	1483728	NA	NA	NA	NA	NO	NO	NO	NO	NO
130	1488696	NA	NA	NA	NA	NO	NO	NO	NO	NO
131	1440329	NA	NA	NA	NA	NO	NO	NO	NO	NO
132	1503490	NA	NA	NA	NA	NO	NO	NO	NO	NO
133	1502649	NA	NA	NA	NA	NO	NO	NO	NO	NO
134	1511701	NA	NA	NA	NA	NO	NO	NO	NO	NO
135	1517159	NA	NA	NA	NA	3RD AND 4TH DAY ADR SAOKED GAUZE KEPT	NO	NO	NO	NO
136	1516345	NA	NA	NA	NA	NO	NO	NO	NO	NO
137	1494542	NA	NA	NA	NA	NO	NO	NO	NO	NO
138	1520141	NA	NA	NA	NA	NO	NO	NO	NO	NO
139	1507725	NA	NA	NA	NA	NO	NO	NO	NO	NO
140	1553315	NA	NA	NA	NA	NO	NO	NO	NO	NO
141	1565993	NA	NA	NA	NA	NO	NO	NO	NO	NO
142	1559468	NA	NA	NA	NA	NO	NO	NO	NO	NO
143	155332	NA	NA	NA	NA	NO	NO	NO	NO	NO
144	1561701	NA	NA	NA	NA	NO	NO	NO	NO	NO
145	1525152	NA	NA	NA	NA	2ND AND 3RD DAY ADR SAOKAED GAUZE KEPT	NO	NO	NO	NO
146	1552656	NA	NA	NA	NA	NO	NO	NO	NO	NO
147	1536529	NA	NA	NA	NA	NO	NO	NO	NO	NO
148	1530300	NA	NA	NA	NA	4TH AND 5TH DAY ADR SOAKED GAUZE KEPT	NO	NO	NO	NO
149	1447110	NA	NA	NA	NA	NO	NO	NO	NO	NO
150	374448	NA	NA	NA	NA	NO	NO	NO	NO	NO

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To
The Principal
Government Medical College & Hospital
Faridkot

Subject:: Approval of Plan of Thesis.

This is to inform you that the Faculty of Medical Sciences in its meeting held on 25.09.2023 has approved the plan of thesis of Amandeep Parmar, a student of your college for MD Anaesthesiology along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Comparison of hybrid tracheostomy with percutaneous dilatational tracheostomy in ICU patients . .

Supervisor
Dr. Tejyana Singh
Asstt. Professor
Dept. of Anaesthesiology.

Co-Supervisor:-
Dr. P. L. Gautam
Prof. & Head
Dept. of Critical Care Medicine

Co-Supervisor:-
Dr. Rohit Verma
Professor
Dept. of E.N.T

The student may submit the thesis in triplicate alongwith the plan in triplicate also, to the Controller of examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She may be directed to attach a photocopy of this letter with the forwarding letter while submitting thesis in the University along with the letter of approval of University in change of supervisor/Co-Supervisor, change of topic, if any.

Controller of Examinations

Note :
1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*

COMPARISON OF HYBRID TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY TECHNIQUE IN ICU PATIENTS

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED
IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF MEDICINE
In

ANAESTHESIOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES
FARIDKOT

AUGUST, 2022

DR. AMANDEEP PARMAR

DEPARTMENT OF ANAESTHESIOLOGY
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA
LUDHIANA, PUNJAB-141001

ABSTRACT OF PLAN OF THESIS

Title	Comparison of hybrid tracheostomy with percutaneous dilatational tracheostomy in ICU patients
For the degree of	M.D. Anesthesiology
Name of the candidate	Dr.Amandeep Parmar
Supervisor	Dr. Udeyana Singh, Associate Professor, Department of Anesthesiology, DMCH, Ludhiana
Co-supervisor	Dr. P.L. Gautam, Professor and Head, Critical Care Medicine, DMCH, Ludhiana Dr.RohitVerma, Professor, Department of ENT, DMCH, Ludhiana
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Tracheostomy is a commonly performed procedure in patients requiring prolonged ventilation. The classical surgical tracheostomy (CST) is the standard surgical procedure performed by general surgeons and otolaryngologists in OT. In the past few decades percutaneous dilatational tracheostomy (PDT) is being performed bedside in ICU. The advantage is that PDT does not require transfer of patients to OT.This decreases staff requirement, thereby decreasing the risk of exposure to infections. PDT has certain limitations that it cannot be performed in patients with previous neck surgery, grossly difficult neck anatomy and coagulopathy. This has led to evolution of a new technique which does not need lots of equipment at bedside known as Hybrid Tracheostomy. We propose to compare Hybrid Technique (HT) with percutaneous dilatational tracheostomy in chronically ventilated ICU patients.

Aim of Study: To compare Hybrid Tracheostomy with Percutaneous Dilatational Tracheostomy in terms of: Duration of procedure, Short term complication like hemorrhage, infection, tube obstruction and tube displacement, Complication during transfer of patients to and from ICU to OT.

Materials & methods: A prospective randomized controlled study will be conducted in the department of Anaesthesiology, Dayanand Medical College & Hospital, Ludhiana after approval by the Institutional Ethics Committee on patients age 18 years or above undergoing tracheostomy during the time period of one year from September 2022 to August 2023. These patients will be randomly allocated to either of the two study groups by computer generated random numbers contained in sealed, sequentially numbered envelopes. A written informed consent will be obtained from each patient/ legal guardian. Participants will be divided into two groups HT and PDT. The two groups will then followed for a period of 7 days to look for incidence of early complications.

Clinical Significance: Use of HT may reduce the risk of early complications compared to PDT and thereby decrease the tracheostomy related morbidity and cost of the procedure. Further HT may limit the number of persons exposed during procedures conducted on infectious patients like COVID 19 infected patients.

Keywords: Tracheostomy, Percutaneous dilatational tracheostomy, classical surgical tracheostomy, Hybrid tracheostomy, Early complications.

Amandeep Parmar (Signature) Candidate | (Signature) Supervisor | (Signature) Co-supervisor | (Signature) Co-supervisor | (Signature) Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"COMPARISON OF HYBRID TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY IN ICU PATIENTS"**exist in the Department of Anaesthesiology at DMC&H, Ludhiana and will be provided to be candidate of will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate herself under our supervision and guidance.

Supervisor

Dr. Udeyana Singh
Associate Professor
Department of Anaesthesiology
DMCH, Ludhiana

Co-Supervisor's

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Place: DMC&H, LUDHIANA

Date: 10/09/22

APPROVAL PROFORMA
BY RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	Dr.Amandeep Parmar
Department	MD Anaesthesiology
Topic of Thesis	Comparison of hybrid tracheostomy with percutaneous dilatational tracheostomy in ICU patients
Likely date of appearing in PG examination	May/June 2024
Date of enrollment	9th March, 2022
Name of Head of Department	Dr. Anju Grewal
1) Supervisor **2) Co-Supervisor**	Dr. Udeyana Singh Dr. P.L. Gautam Dr.Rohit Verma
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology)	Mr. R K Sharma (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Ramit Mahajan (Associate Professor, Gastroenterology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / ~~No~~

Dr. Sandeep Puri
Chairperson
Research Committee
Chairperson
Research Committee

Approved: Yes / ~~No~~

Prof. Arvind Malhotra
Chairperson
Ethics Committee
Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	DR. AMANDEEP PARMAR URBAN ESTATE DUGRI LUDHIANA
2	NAME OF THE INSTITUTE	DAYANAND MEDICAL COLLEGE AND HOSPITAL, LUDHIANA
3	COURSE OF STUDY AND SUBJECT	MD ANAESTHESIOLOGY
4	DATE OF ADMISSION OF COURSE	09/ 03/ 2022
5	TITLE OF THE TOPIC	COMPARISON OF HYBRID TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY TECHNIQUE IN ICU PATIENTS

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Tracheostomy is a commonly performed surgical procedure to establish airway for patients requiring long term mechanical ventilation.[1] Classical Surgical tracheostomy (CST) is commonly performed by general surgeons and otolaryngologists in operation theatre. In ICU setting, Percutaneous dilatational tracheostomy (PDT) is performed bedside by intensivist to avoid the risk involved in transferring critically ill patient from ICU to OT.[2.3]

CST though safe has many limitations in current practice such as the need to transfer the patient to Operation theatre which is not possible in hemodynamically unstable patients and critically ill patients. It increases exposure to infections and also increases cost of procedure because of need of an OT, trained nursing staff and anesthesiologist.[4]

PDT has become safe and feasible in recent times ensuring patient safety with very low complications rate. PDT also has limitations that it cannot be performed in patients with history of previous neck surgery, short neck, previous cervical spine injury, immobilization, morbid obesity and coagulopathy.[4,5] A new technique Hybrid tracheostomy (HT) has been developed which combines the advantages of both techniques. Hybrid tracheostomy is performed bedside in ICU which involves separation of tissues under vision through a small incision on the neck. It can be done bedside thereby avoiding the need to shift critically ill patients from ICU to OT. By placing tube under direct visualization, it decreases the incidence of complications such as hemorrhage, tube misplacement especially in cases with difficult neck anatomy.[6] It is particularly useful in situations where patient need to be isolated due to infectious diseases as has been the need during COVID pandemic.[7,8] It decreases the number of exposed persons and the requirement of lots of equipment.[4] Though promising there is not much published literature available regarding the hybrid tracheostomy technique. Therefore, we propose to conduct a study

in our hospital comparing the Hybrid tracheostomy technique with percutaneous dilatational tracheostomy.

6.2 REVIEW OF LITERATURE

Tracheostomy term originates form two Greek word (trachea-tomeo) means “cutting the trachea".[9,10]Tracheostomy is a surgically created airway that is kept open with a breathing tube or tracheostomy tube. The tube is inserted into trachea directly through an incision in neck either by classical surgical tracheostomy (CST) or percutaneous dilatational tracheostomy (PDT) method. Tracheostomy was rarely successful until nineteenth century.[11] Early 1900s saw standardization of modern tracheostomy by Chevalier Jackson thereby establishing it as simple, safe and effective procedure to establish airway. Jackson advocated entry into trachea at anterior aspect of second and third tracheal rings which has not changed over decades.[9] In1960, Bjork modified this technique where an inferiorly based flap of portion of second and third tracheal rings is sutured to skin of neck. This provides safe path to reinsert tracheostomy tube in cases of early tube dislodgement and avoided potentially disastrous complication of false passage. This so-called Bjork flap is widely advocated by otolaryngologist.[12]

PDT was first attempted in 1955 by Sheldon et al by gaining airway access with a slotted needle which is used to guide a cutting trocar into trachea. This procedure did not gain much popularity over CST due to multiple deaths that were reported due to laceration of vital structures in the neck by the trocar.[12]

In 1985, Ciaglia et al described a new technique for PDT which was proposed as low cost and low mortality alternative to CST. This new technique involve the insertion of tracheostomy tube with the use of guidewire through a cannula into tracheal lumen followed by serial dilations with sequentially large dilators using Seldinger technique under bronchoscopic guidance.[9] Compared to CST early results of this technique were excellent. Since then, six different commonly performed techniques can be distinguished. These are balloon dilation tracheostomy (BDT), guidewire dilating forceps tracheostomy (GWT), Multiple dilator

tracheostomy (MDT), rotational dilation tracheostomy (RDT), single step dilatational tracheostomy (SSDT) and trans laryngeal tracheostomy (TLT).[13-15]

In1990 Griggs et al developed another guidewire dilating forceps with smooth rounded tip and it provides rapid formation of tracheostomy compared to Ciaglia's technique which takes longer time.[16]

In today's time Ciaglia's multiple dilators kit and Griggs single step dilation forceps kit are most widely used worldwide.[17] In 1999, Cigala modified his own technique by replacing multiple dilators with single tapered dilator "Blue Rhino" called Cigala Blue Rhino (CBR) technique.[16,18] This was last updated as Ciaglia Blue Dolphin Tracheostomy Introducer Kit in which expansible balloon is used as dilator which is introduced into soft tissues and trachea over guiding catheter and forced to expand for 30secs before being removed and replaced by tracheostomy tube.[19] There is a new technique which requires use of single step screw dilator that is threaded into tracheal stroma using lifting motion have been recently described by Fova and Quintel.[9]

A randomized controlled study conducted by William Silvester et al in 2006 comparing percutaneous versus surgical tracheostomy with long term follow up (>12 months).100 patients are taken in each PDT and ST group. Out of 100 patients in PDT group 29 had long term follow up and out of 100 patients taken in ST group 42 had long term follow up. The combined procedural complication rate was 3.5 %. Perioperative bleeding was minimal in majority of patients and only 3 patients in PDT group had significant bleeding. In all 3 bleeding was stemmed with pressure and procedure was converted to ST. One patient in PDT group developed pneumothorax One patient in ST group accidently decannulated 10 mins post insertion. There was no significant difference between groups in terms of incidence of bleeding in first three postoperative day or presence of infection. There was high incidence of infection reported on postoperative day in ST group. There was even distribution of symptoms

of dyspnea, stridor and cough between both groups. They concluded that both procedures can be safely performed at the bedside and was unable to find significant difference of perioperative and postoperative complications between both groups.[20]

There has been many meta-analyses comparing PDT and ST. Rosa Klotz et al did a systematic review and meta-analysis in 2017 on perioperative and post operative complications. To achieve highest level of evidence, they included RCTs only. The mean duration of PDT varies from 4 to 32 mins and that of ST from 9 to 44 min. The primary end point of this study was risk of potentially life-threatening complication such as loss of airway, false route, tracheo/esophageal injury, major bleeding, pneumothorax/subcutaneous emphysema, gastric aspiration, difficult tube exchange and others. There was no significant difference between PDT and ST in late complications including tracheal stenosis, tracheomalacia and tracheocutanous/ esophageal fistula (RD – 0.01, 95% CI – 0.06 TO 0.03, p = 0.51). This study concluded that ST and PDT are safe techniques with low incidence of complications .ST has advantages that it can be performed in all patients whereas PDT is limited by several contraindications.[8]

There are few studies on hybrid tracheostomy. In 2016 Alberto Molardi et al did study on hybrid tracheostomy. 67 Tracheostomies were performed using New Modified Surgical Technique (NMST) AND 56 with Classical Surgical Technique (CST). Data was collected on early clinical complications, TT related mortality and late complications by doing telephonic follow up. NMST group have significantly lower number of early complications (p=0.005) compared to CST group (5 versus 10). In hospital mortality was significantly higher in CST group (18 deaths versus 4 in NMST group, P= 0.001). There was no difference in group regarding short term and mid to long term mortality This study concluded NMST group had significant lower number of early complications compared to CST group. In hospital TT related mortality was higher in CST group. There

was no difference in groups regarding short or mid – long term complications.[6]

Daeu Kang et did a study in 2021 on safety and feasibility of hybrid tracheotomy. Data from 55 patients who received hybrid tracheostomy without bronchoscopy were collected. Duration of procedure was 13.3 min. Out of 55 patients, 13 had immediate complications. 12 patients had oozing at tracheostomy site and 1 patient had paratracheal placement of tracheostomy tube This study concluded that procedure can be safely performed without any major complications, can be done in patients taking antiplatelet or anticoagulants and it does not need lots of equipment's and experts at bedside but it has limitations such as it cannot be performed on patients with short neck, neck burn or patients who received radiation therapy to neck.[3]

6.3 AIMS AND OBJECTIVES OF THE STUDY

To compare Hybrid Tracheostomy with Percutaneous dilatational tracheostomy and classical surgical tracheostomy in terms of

- Duration of procedure
- Eary Complications (upto7 days) and adverse events

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

After clearance by institutional ethics committee the study will be conducted on patients admitted in DMC&H ICU who are intubated and require prolonged ventilation thereby needing tracheostomy. A prospective study will be conducted during the one year period from September, 2022 to August,2023. Written Informed consent will be taken from legal guardian regarding the procedure and also for participation in the study. Patients of either sex, age 18 and above needing tracheostomy will be randomly allocated to either of two groups Percutaneous Dilatational Tracheostomy (PDT) and Hybrid Tracheostomy (HT) randomly and procedure performed. Participants will then be followed for a period of 7 days to look for development of any complications.

7.2 METHOD OF COLLECTION OF DATA

Prospective randomized controlled study will be conducted on patients age 18 years and above requiring tracheostomy. After obtaining informed written consent, patients will be allocated to either of two groups. Percutaneous dilatational Tracheostomy (PDT) or Hybrid tracheostomy (HT) group via computer generated random numbers sealed in envelope. Percutaneous dilatational tracheostomy will be performed by intensivist; Hybrid tracheostomy will be performed by intensivist and otolaryngologist bedside in the ICU. After appropriate sedation, procedure will be performed. Patient will be followed for a period of 7 days. The data thus collected will be statistically analyzed.

INCLUSION CRITERION

- Patients requiring tracheostomy for prolonged ventilation
- Weaning failure

EXCLUSION CRITERION

- Refusal of consent for tracheostomy and inclusion in study
- Uncontrolled coagulopathy

- Infection at tracheostomy site

PROCEDURE FOR PDT TECHNIQUE

Patients will undergo a standard percutaneous dilatational tracheostomy using Grigg's dilatation technique. Each patient will be assessed before the procedure by using ICU scoring system (SOFA score). Pre-procedure assessment and investigations (hemogram, renal function tests, PT/INR, ABG) will be done as per institutional protocol. The procedure will be explained and a written, informed consent will be obtained from the patient/legal guardian. Monitors will be attached for continuous monitoring of ECG, heart rate, spO2 and Noninvasive blood pressure (NIBP). Intravenous access will be ensured.

Patient will be sedated by giving intravenous Midazolam 0.1 to 0.2mg/kg and Fentanyl 2 ug/kg. Muscle paralysis will be achieved by using Inj. Atracurium 0.5 mg/Kg I/v. Patient will be positioned by placing a roll underneath the shoulders causing extension at neck. After suctioning Endotracheal Tube will be pulled out upto black mark at level of vocal cords under laryngoscopic guidance and patient will be put on VCV mode of ventilation with Fio2 1.0. Under all aseptic conditions neck will be cleaned with 10 % povidone iodine and draped with sterile drapes. Anatomical landmarks thyroid notch, cricoid cartilage, tracheal rings suprasternal notch will be marked on the skin. Space between tracheal rings T2 and T3 (T1 and T2 in those with short neck) will be palpated and infiltrated with 3 to 5 ml, 2 % xylocaine with adrenaline. A small horizontal incision will be made at same level and then skin and subcutaneous tissue dilated using artery forceps until trachea is reached. Trachea will be punctured under broncoscopic guidance using 14 G cannula to which a saline filled syringe is attached. After aspiration of air syringe will be detached and guidewire will be inserted through 14 G cannula. J tip Guide wire will be guided through outer sheath into trachea using railroad technique. Keeping guide wire inside trachea, outer canula will be

removed. Then white dilator will be glided over guide wire to dilate tracheal puncture site and the dilator will be removed. A metal dilator Grigg'sguidewire dilating forceps (GGDF) will be glided over guide wire into trachea. As it pierces trachea it gives a giveaway feeling, then the jaws are opened leading to dilatation of skin, subcutaneous tissue and trachea. Then the metal dilator will be removed while guide wire is still inside trachea. Finally appropriate size cuffed tracheostomy tube (cuff checked and lubricated) with stylet in situ will be passed over guide wire using railroad technique into trachea. Then purple stylet and guide wire will be removed and cuff will be inflated. Tracheostomy tube position will be confirmed using auscultation for bilateral equal air entry, EtCo2 reading and airway pressure. Tracheostomy tube will be secured with help of ribbons provided in the kit. Antiseptic dressing will be done with betadine dressing and Endotracheal tube will be removed with continuous suctioning. Duration of procedure and relevant data will be noted.

PROCEDURE FOR HYBRID TRACHEOSTOMY

Each patient will be assessed before the procedure by using ICU scoring system (SOFA score). Relevant investigations hemogram, PTI/ INR, RFT, ABG will be checked as per hospital protocol. Informed written consent will be obtained from patient/legal guardian. Continuous ECG, NIBP, spO2, EtCo2 monitoring will be done. Intravenous access will be ensured. Suction equipment and cautery will be kept ready for use. A pillow will be placed underneath shoulder to extend the neck. Appropriate sedation, analgesia, and muscle paralysis with Inj Fentanyl 2 ug/ kg, Inj Midazolam 0.1 to 0.2 mg/ kg, Inj.Atracurium 0.4 to 0.5 mg/kg administered according to body weight and titrated upwards according to clinical response. After oral and endotracheal suctioning Endotracheal Tube will be pulled out upto black mark at level of vocal cords under laryngoscopic guidance and patient will be put on VCV mode of ventilation with Fio2 1.0. Under all aseptic conditions neck will be cleaned with 10 % povidone iodine and draped with sterile drapes. Anatomical landmarks will be marked and

identified (Thyroid notch, cricoid, tracheal rings and sternal notch). If tracheal rings are not palpable then a point 1 cm below cricoid cartilage will be marked and infiltrated with 3 to 5 ml of 2% lignocaine with Adrenaline (1: 200,000). A 1.5 cm transverse incision will be made and pretracheal tissues separated with a scissor/ mosquito forceps and retracted with Volkman's retractor. Soft tissue will be dissected to visualize trachea. Haemostasias achieved by packing or use of electric cautery as required. Thyroid isthmus if encountered will be retracted superiorly or inferiorly. The trachea will be visualized at the level of second and third tracheal rings. Trachea will be punctured under vision with a 14 G cannula on needle in posterior and caudal direction. Entry into trachea is confirmed by aspiration of air bubble in saline filled syringe. A 'j' tip guide wire is passed through the cannula into trachea lumen. There after cannula is removed and initial dilator is passed over guidewire for tracheal wall dilatation and removed. The Grigg'sguidewire dilating forceps with jaws closed will be advanced over guidewire. Opening of the forceps will allows dilation of tracheal wall. After formation of stoma, the Griggs dilator will be removed keeping guidewire in place. A cuffed tracheostomy tube will be advanced over the tracheal guidewire. The guidewire will then removed. Tracheostomy tube will be connected to the ventilator. Placement of the tube will be confirmed using auscultation for bilateral equal air entry, EtCo2 reading and airway pressures. Tracheostomy tube will be secured with helps of ribbons provided in the kit. Antiseptic dressing will be done with betadine and Endotracheal tube will be removed with continuous suctioning and duration of procedure will be noted.

In both groups, time after cleaning and draping to the skin incision will be noted (Assessment time). Also, time from skin incision to the placement and confirmation of the tracheostomy tube will be noted (Procedure time). Intra procedural and post procedural complications will be noted and post tracheostomy tube insertion chest radiograph taken after 2 hours to note position of tracheostomy tube and complications like

pneumothorax. In case of any difficulty during Hybrid Tracheostomy or Percutaneous Dilatation procedure will be converted to Classical Surgical Tracheostomy by expert help.

DATA COLLECTION:

- Baseline demographic data (age, sex, weight, height)
- Identification of landmarks
- Assessment time
- Site of needle insertion
- Number of attempts for successful and uneventful needle insertion
- Number of attempts for successful and uneventful tracheostomy tube insertion
- Procedure time
- Complications arising during the procedure.
- Post procedure complications.
- Post insertion chest radiograph after 2 hours of the procedure (to note complications like pneumothorax)
- Need for conversion to other tracheostomy technique.

PRIMARY OUTCOME

Duration of procedure for successful placement of tracheostomy tube

SECONDARY OUTCOMES

1. Adverse events during transfer of patients to and from ICU to OT.
2. Patients in both groups are compared for early complications:
    - Hemorrhage
    - Infection
    - Emphysema
    - Tube obstruction
    - Early tube displacement
    - Esophageal injury

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. To determine whether the data is normally distributed, a Kolmogorov-Smirnov test will be used. Comparison of quantitative variables between the study groups will be done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square ($\chi 2$) test will be performed and fisher exact test was used when the expected frequency is less than 5. A probability value (p value) less than 0.05 was considered statistically significant. A probability value (p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

The study does not require any investigations or interventions other than those routinely done in participants for tracheostomy

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes, Attached here with

8. LIST OF REFERENCES

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PROFORMA

Group: Enrolment date:
Sr. No. MRD No.
Diagnosis: Type of tracheostomy:
Performed by:
Indications of tracheostomy:

Type of Respiratory Failure	
Neurological Status (GCS)	
Any other	

Cervical spine injury: Yes or No,
If Yes level of injury:
Days on mechanical ventilation prior to tracheostomy:
Date of the procedure:

BASELINE CHARACTERISTICS:

Age(yrs): Sex:
Height(m): Weight (Kg):
Neck circumference(cm):
Sternomental distance(cm):
Thyromental distance(cm):
Neck surface landmark palpable: Yes or No

Sequential Organ Failure Assessment (SOFA) score

PaO2(mmHg)	
Glasgow coma score(/15)	
Mean arterial pressure(mmHg)	
Platelet counts(10^3/ul)	
Serum creatinine(mg%)	

Investigations:

Platelet count (10^3 / uL)	
PTI/INR	
Hemoglobin(g%)	
Serum Creatinine(mg%)	
Serum Urea(mg%)	
Serum Sodium/Potassium/Chloride(meq/L)	
Pao2/FiO2	

Place of procedure: Bedside/OT

Signature of Candidate **Signature of Supervisor**

Medication given before the procedure:

Medication	Dose
Fentanyl	
Midazolam	
Atracurium	

VITALS PARAMETERS

PRE PREOCEDURAL VITALS

TIME	HR	SAP	MAP	SpO2	RR
BASELINE					

PROCEDURAL VITALS

TIME	HR	SAP	MAP	SPO2	RR
0 min					
5 min					
10 min					
15 min					
20 min					
25 min					
30 min					
35 min					
40 min					
45 min					
50 min					
55 min					
60 min					

POST PROCEDURAL VITALS

TIME	HR	SAP	MAP	SpO2	RR
0 min					
15 min					
30 min					
45 min					
60 min					
75 min					
90 min					

Signature of Candidate **Signature of Supervisor**

PROCEDURAL RECORDINGS:

Identification of landmarks by palpation	Yes or No
Assessment time	
Site of needle insertion	
Number of attempts for successful needle insertion	
Number of attempts for successful tracheostomy tube insertion	
Procedure time	

PROCEDURAL COMPLICATIONS

COMPLICATION	Y/N	TIME	MANAGEMENT
Minor Bleeding			
Bleeding Requiring intervention			
Surgical Emphysema			
Pneumothorax			
Tracheal injury			
Esophageal Injury			
Paratracheal placement/False Tract placement			
Hemodynamic Instability			
Desaturation			
Ruptured ETT cuff			
Any other			

EVENTS DURING TRANSFER OF PATIENTS TO AND FROM ICU TO OT

COMPLICATION	Y/N	TIME	MANAGEMENT
Accidental decannulation			
Desaturation			
Bleeding			
Hemodynamic Instability			
Arrhythmia			
Any other			

POST PROCEDURAL COMPLICATIONS

COMPLICATION	Y/N	TIME	MANAGEMENT
Bleeding			
Soft tissue injury			
Accidental Decannulation / Tube Displacement			
Any finding on Chest Xray done after 2 hours			
Any other			

Signature of Candidate **Signature of Supervisor**

INFORMED PATIENT CONSENT

Date: _____

I……..D/o,W/o,S/o…… ……. ……am willing to participate in the study "**COMPARISON OF HYBRID TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY IN ICU PATIENTS**" The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

…… ……

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य **"COMPARISON OF HYBRID TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY IN ICU PATIENTS"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____	_____
गवाह के हस्ताक्षर	रोगी के हस्ताक्षर/अंगूठे का निशान
नाम:	नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____

ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____ਵਾਸੀ_____

_____ “**COMPARISON OF HYBRID TRACHEOSTOMY WITH PERCUTANEOUS DILATATIONAL TRACHEOSTOMY IN ICU PATIENTS**” ਤੇਚਲਰਹੀਖੋਜਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ–ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈਸਕਦਾ ਹਾਂ/ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ